Service Manual

High Speed Combination Oven

AXP20

P1333601M

P1333602M

AXP20JB

P1333606M

AXP20MK

P1333612M

AXP20QT

P1333610M

MXP20

P1333614M

P1333615M

60 Hz
January 2011

16400002 Rev.3

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Important Information

Important Notices for Servicers and Consumers

ACP will not be responsible for personal injury or property damage from improper service procedures. Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments and the appropriate service information. IT IS THE TECHNICIANS RESPONSIBLITY TO REVIEW ALL APPROPRIATE SERVICE INFORMATION BEFORE BEGINNING REPAIRS.

⚠ WARNING

To avoid risk of severe personal injury or death, disconnect power before working/servicing on appliance to avoid electrical shock.

To locate an authorized servicer please contact:

ComServ Support Center

ComServ Commercial Service

Web Site	Telephone Number
WWW.ACPSOLUTIONS.COM	1-866-426-2621 or 319-368-8195

E-Mail: commercialservice@acpsolutions.com

Recognize Safety Symbols, Words, and Labels

⚠ DANGER

DANGER— Immediate hazards which WILL result in severe personal injury or death.

⚠ WARNING

WARNING— Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ CAUTION

CAUTION— Hazards or unsafe practices which COULD result in minor personal injury, product or property damage.

Important Safety Information

⚠ WARNING

Read the following information to avoid possible exposure to microwave radiation:

The basic design of the Microwave Oven makes it an inherently safe device to both use and service. However, there are some precautions which should be followed when servicing the microwave to maintain this safety. These are as follows:

1. Always operate the unit from an adequately grounded outlet. Do not operate on a two-wire extension cord.

2. Before servicing the unit (if unit is operable) perform the microwave leakage test.

3. The oven should never be operated if the door does not fit properly against the seal, the hinges or hinge bearings are damaged or broken; the choke is damaged, (pieces missing, etc.); or any other visible damage can be noted. Check the choke area to ensure that this area is clean and free of all foreign matter.

4. If the oven operates with the door open and produces microwave energy, take the following steps:
   A. Tell the user not to operate the oven.
   B. Contact ACP ComServ immediately.

5. Always have the oven disconnected when the outer case is removed except when making the "live" tests called for in the Service Manual. Do not reach into the equipment area while the unit is energized. Make all connections for the test and check them for tightness before plugging the cord into the outlet.

6. Always ground the capacitors on the magnetron filter box with an insulated-handle screwdriver before working in the high voltage area of the equipment compartment. Some types of failures will leave a charge in these capacitors and the discharge could cause a reflex action which could make you injure yourself.

7. Always remember that in the area of the transformer there is HIGH VOLTAGE. When the unit is operating keep this area clear and free of anything which could possibly cause an arc or ground, etc.

8. Do not for any reason defeat the interlock switches there is not valid reason for this action at any time; nor will it be condoned by ACP.

9. IMPORTANT: Before returning a unit to a customer, be sure to check for proper switch interlock action.

10. The Microwave Oven should never be operated with any components removed and/or bypassed or when any of the safety interlocks are found to be defective, or when any of the seal surfaces are defective, missing, or damaged.

11. All microwave ovens meet all requirements of the radiation control for Health and Safety Act of 1968. Due to measurement uncertainties, the maximum leakage for the field will be 4mw/cm^2.

12. To ensure that the unit does not emit excessive microwave leakage and to meet the Department of Health and Human Services guidelines, check the oven for microwave leakage using a microwave oven leakage meter that complies with US Government CDRH / FDA / DHHS requirements and or any other local government requirements. The maximum leakage level allowed by ACP is 4mw/cm^2.

13. If servicer encounters an emission reading over 4mw/cm^2, the servicer is to cease repair and contact the ACP ComServ Department immediately for further direction. ACP will contact the proper Government Agency upon verification of the test results.

Important Safety Information

Recognize this symbol as a SAFETY message

WARNING

When using electrical equipment, basic safety precautions should be followed to reduce the risk of burns, electrical shock, fire, or injury to persons.

1. READ all instructions before using equipment.
2. READ AND FOLLOW the specific "PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY".
3. This equipment MUST BE GROUNDED. Connect only to properly GROUNDED outlet. See "GROUNDING INSTRUCTIONS".
4. Install or locate this equipment ONLY in accordance with the installation instructions in this manual.
5. Some products such as whole eggs and sealed containers, for example, closed glass jars may explode and SHOULD NOT be HEATED in this oven.
6. Use this equipment ONLY for its intended use as described in this manual. Do not use corrosive chemicals or vapors in this equipment. This type of oven is specifically designed to heat or cook. It is not designed for industrial or laboratory use.
7. As with any equipment, CLOSE SUPERVISION is necessary when used by CHILDREN .
8. DO NOT operate this equipment if it has a damaged cord or plug, if it is not working properly, or if it has been damaged or dropped.
9. This equipment, including power cord, must be serviced ONLY by qualified service personnel. Special tools are required to service equipment. Contact nearest authorized service facility for examination, repair, or adjustment.
10. DO NOT cover or block filter or other openings on equipment.
11. DO NOT store this equipment outdoors. DO NOT use this product near water, for example, near a kitchen sink, in a wet basement, or near a swimming pool etc.
12. DO NOT immerse cord or plug in water.
13. Keep cord AWAY from HEATED surfaces.
14. DO NOT let cord hang over edge of table or counter.
15. See door cleaning instructions in "Care and Cleaning" section.
16. For commercial use only.

CAUTION

To reduce risk of fire in the oven cavity:

a. DO NOT overcook food. Carefully attend equipment if paper, plastic, or other combustible materials are placed inside the oven to facilitate cooking.

b. Remove wire twist-ties from paper or plastic bags before placing bag in oven.

c. KEEP oven DOOR CLOSED , turn oven off, and disconnect the power cord, or shut off power at the fuse or circuit breaker panel, if materials inside the oven should ignite. Fire may spread if door is opened.

d. DO NOT use the cavity for storage. DO NOT leave paper products, cooking utensils, or food in oven.

SAVE THESE INSTRUCTIONS

Important Safety Information

⚠ CAUTION

To avoid risk of personal injury or property damage, observe the following:

1. Briskly stir or pour liquids before heating with microwave energy to prevent spontaneous boiling or eruption. Do not overheat. If air is not mixed into a liquid, liquid can erupt in oven or after removal from oven.
2. Do not deep fat fry in oven. Fat could overheat and be hazardous to handle.
3. Do not cook or reheat eggs in shell or with an unbroken yolk using microwave energy. Pressure may build up and erupt. Pierce yolk with fork or knife before cooking.
4. Pierce skin of potatoes, tomatoes, and similar foods before cooking with microwave energy. When skin is pierced, steam escapes evenly.
5. Do not operate equipment without load or food in oven cavity.
6. Do not use regular cooking thermometers in oven. Most cooking thermometers contain mercury and may cause an electrical arc, malfunction, or damage to oven.
7. Do not heat baby bottles in oven.
8. Never use paper, plastic, or other combustible materials that are not intended for cooking.
9. When cooking with paper, plastic, or other combustible materials, follow manufacturer's recommendations on product use.
10. Do not heat sealed containers or plastic bags in oven. Food or liquid could expand quickly and cause container or bag to break. Pierce or open container or bag before heating.
11. To avoid pacemaker malfunction, consult physician or pacemaker manufacturer about effects of microwave energy on pacemaker.

PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

a. DO NOT attempt to operate this oven with the door open since open-door operation can result in harmful exposure to microwave energy. It is important not to defeat or tamper with the safety interlocks.

b. DO NOT place any object between the oven front face and the door or allow soil or cleaner residue to accumulate on sealing surfaces.

c. DO NOT operate the oven if it is damaged. It is particularly important that the oven door close properly and that there is no damage to the: (1) door (bent), (2) hinges and latches (broken or loosened), (3) door seals and sealing surfaces.

d. The oven should NOT be adjusted or repaired by anyone except properly qualified service personnel.

SAVE THESE INSTRUCTIONS

Important Safety Information

Grounding Instructions

WARNING

To avoid risk of electrical shock, injury or death; make sure these grounding instructions are followed.

WARNING

Do not remove grounding prong when installing grounded appliance in a home or business that does not have three wire grounding receptacle, under no condition is grounding prong to be cut off or removed. It is the personal responsibility of the consumer to contact a qualified electrician and have properly grounded three prong wall receptacle installed in accordance with appropriate electrical codes.

WARNING

To avoid the risk of electrical shock or death, do not alter the plug.

WARNING

To avoid the risk of electrical shock or death, this equipment must be grounded.

This equipment MUST be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This oven is equipped with a cord having a grounding wire with a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded.

Consult a qualified electrician or servicer if grounding instructions are not completely understood, or if doubt exists as to whether the equipment is properly grounded.

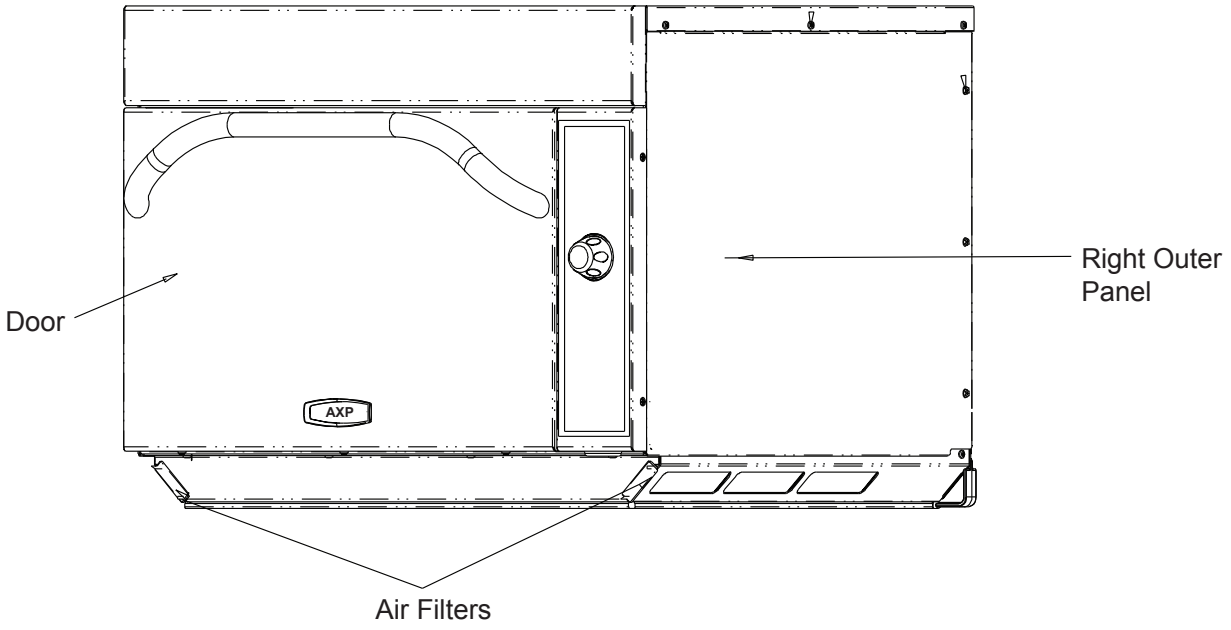
Do not use an extension cord. If the product power cord is too short, have a qualified electrician install an appropriate receptacle. This oven should be plugged into a separate 50 or 60 hertz circuit with the electrical rating as shown in the appropriate drawing. Models operate with a 208 or 230 supply voltage. When an oven is on a circuit with other equipment, an increase in cooking times may be required and fuses can be blown.

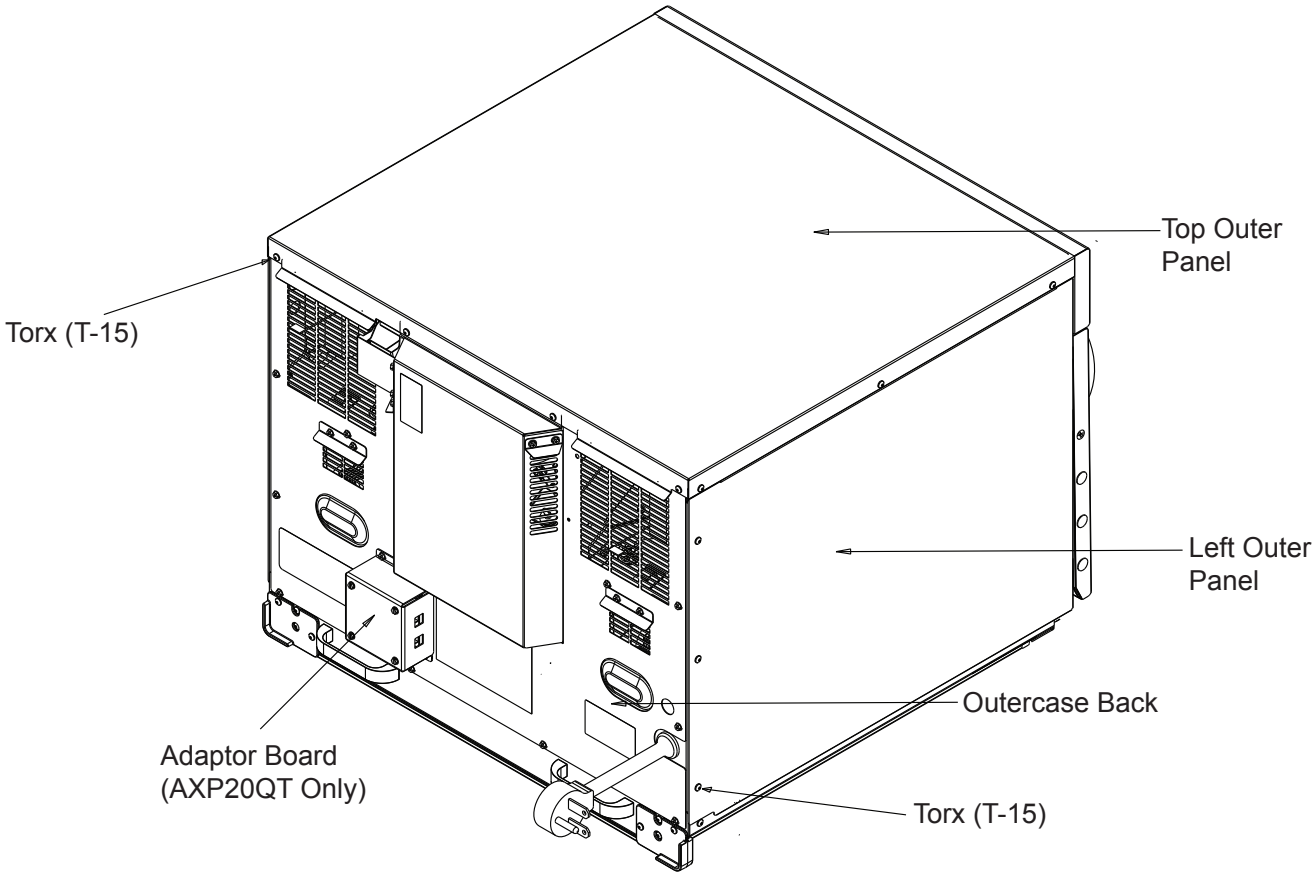
SPECIFICATIONS

Models	AXP20 AXP20JB AXP20QT AXP20MK	P1333601M / P1333602M P1333606M P1333610M P1333612M
Power Source		
Voltage AC		208/230 VAC
Amperage (Single Unit)		30 A
Frequency		60 Hz
Single Phase, 3 wire grounded		X
Receptacle		6-30R
Plug		6-30P
Power Output – Microwave		
Nominal microwave energy (IEC705)		2200 Watts
Minimum Temperature Rise (∆T)		22°F / 12°C
Operating Frequency		2450 MHz
Power Consumption		5700 Watts
Microwave only		4200 Watts
Convection fan		425 Watts / 6200 RPM
Radiant heater		3000 Watts
Convection heater		2000 Watts
Combination		5300Watts
Dimensions		
Cabinet (in / cm)		
Width		25” 63.5 cm
Height		20 .25” 51 cm
Depth (includes bracket on back)		25.625” 65 cm
Oven Interior (in / cm) – useable space		
Width		16.0” 41 cm
Height		7.75” 20 cm
Depth		15.0” 38 cm
Weight (lbs. / kg)		
Uncrated		150 lbs. 68 kg
Crated		175 lbs. 79 kg

OVEN CONSTRUCTION-

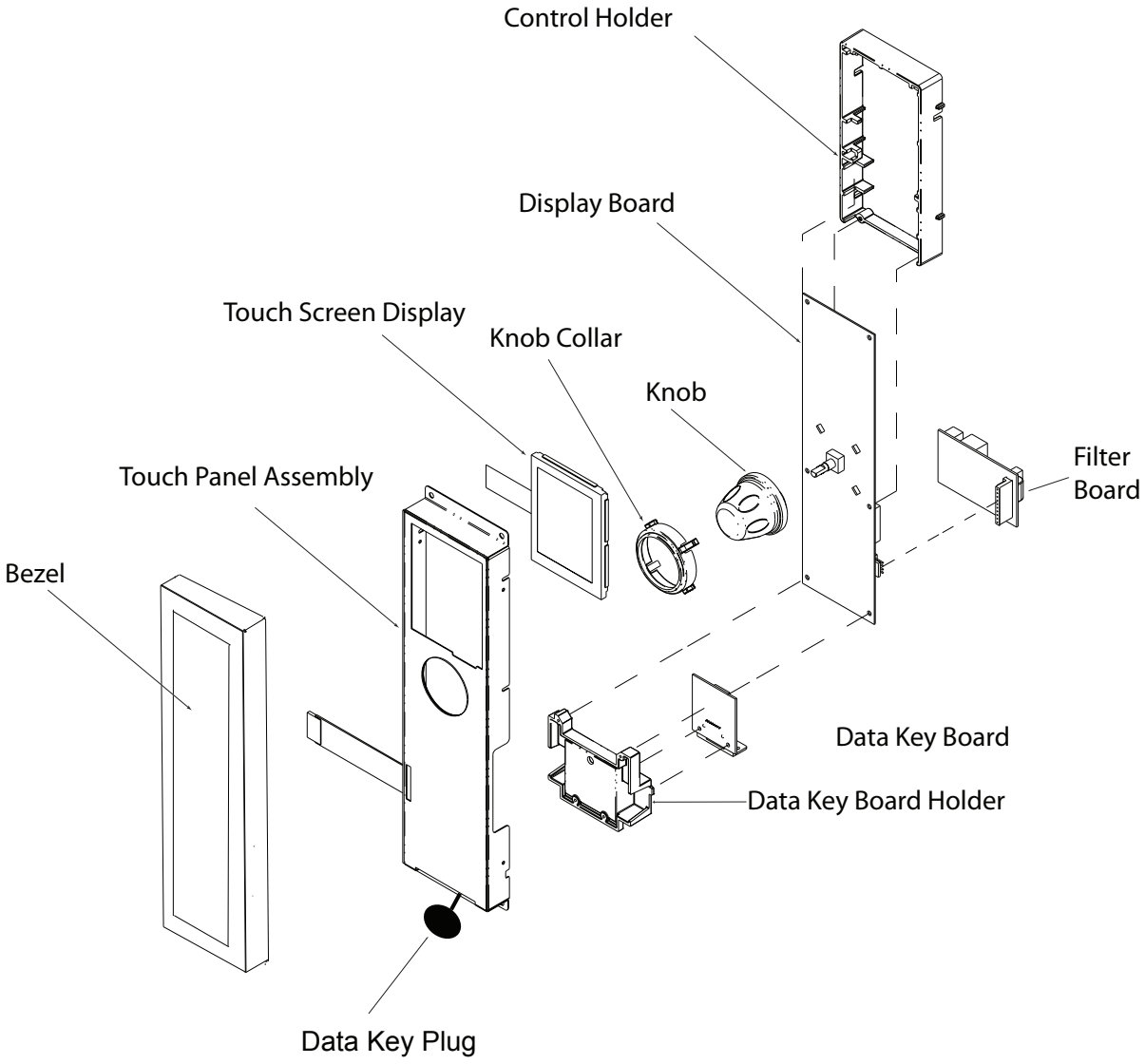
PANELS (TOP & SIDE)





OVEN CONSTRUCTION-

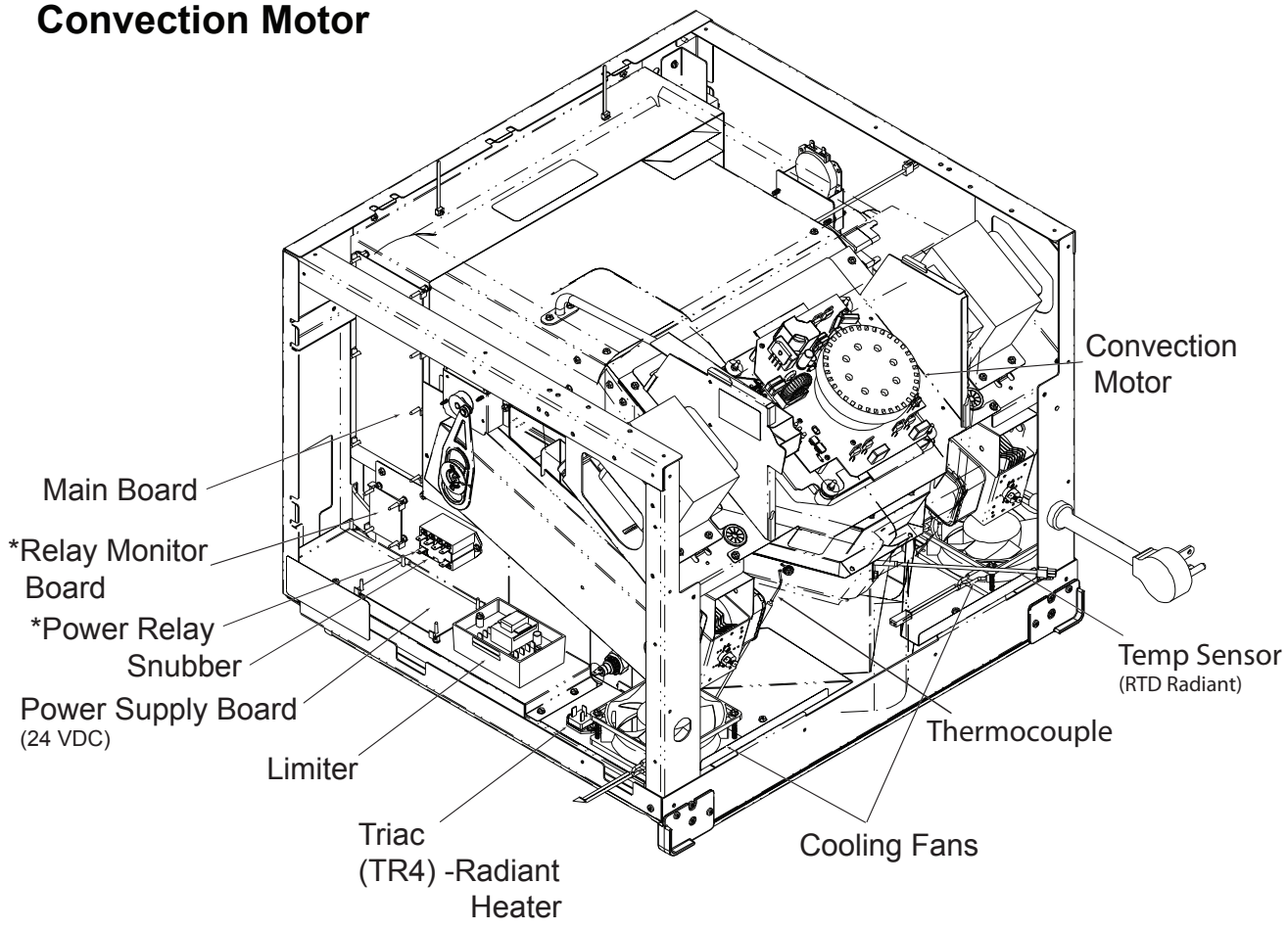
OVEN CONSTRUCTION
CONTROL PANEL ASSEMBLY



Caution: Do not handle touch screen display by the sides. This may damage the display circuitry. Handle using the corners.

OVEN CONSTRUCTION-

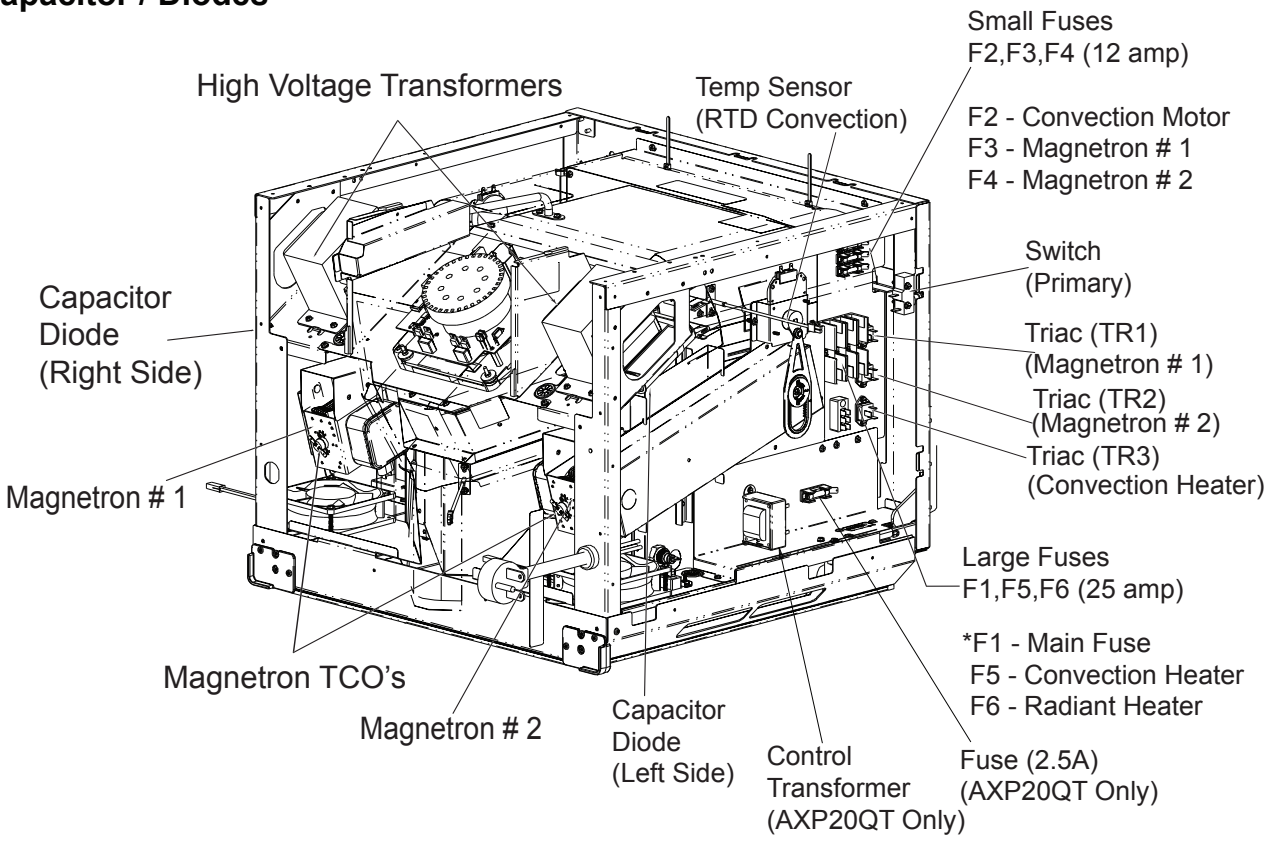
Circuit Boards
Power Relay
Limiter
Triac
Thermocouple
Temp Sensor (RTD)
Cooling Fans
Convection Motor



***Note: If Main Fuse (F1) is blown replace Relay Monitor Board and Power Relay.**

OVEN CONSTRUCTION-

HV Transformers
Magnetrons
Fuses
Sensor
Triac's
Magnetron TCO's
Capacitor / Diodes



***Note: If Main Fuse (F1) is blown replace Relay Monitor Board and Power Relay.**

OVEN CONSTRUCTION-

Oven Switch Replacement & Interlock Switch Adjustment

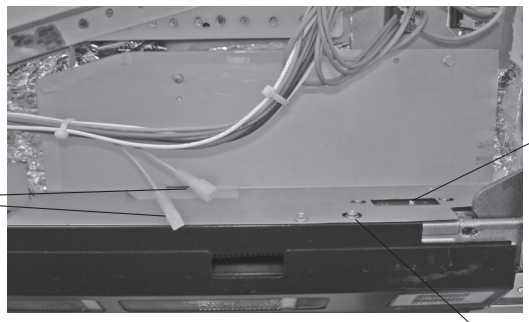


Figure 1

Adjustment

Switch Test:

When the door is opened or closed, the left door hinge activates the secondary / monitor switches.

1. Connect an ohm-meter to wire harness (as shown in figure 1, to verify switch activation).

Note: The switch assembly should activate when the door gap is approximately 1/4 inch (6mm).

Switch Adjustment:

1. Loosen mounting screws.
2. Slide adjustment lever for proper switch activation.
3. Tighten mounting screws.
4. Preheat oven to set temperature and verify switch adjustment settings and function.

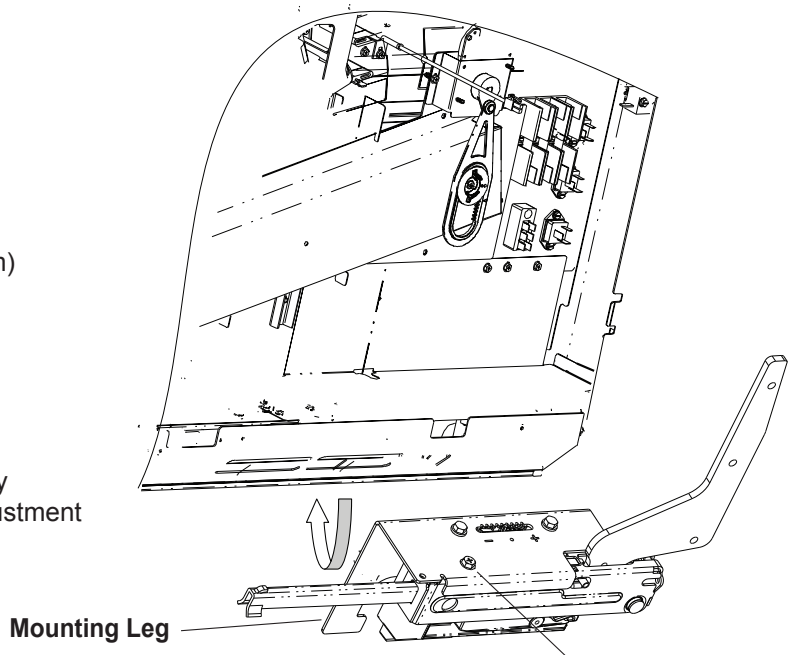
Note: To ensure proper switch adjustment, the switch mounting MUST be tightened after each adjustment prior to testing the door alignment.

Replacement

Removal:

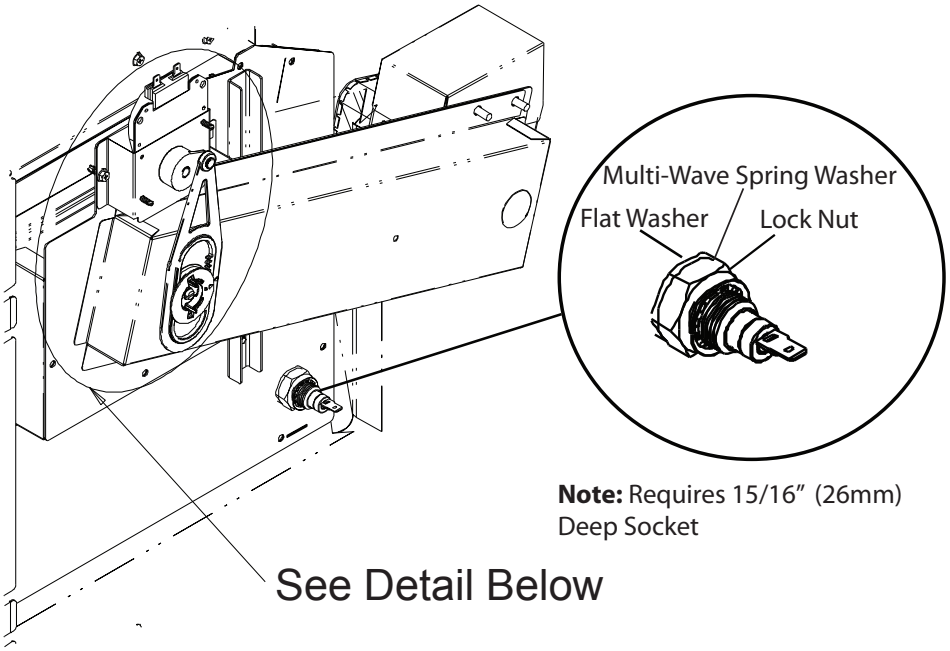
1. Remove switch assembly mounting screw.
2. Push switch assembly 1/2 inch (13mm) towards back of oven.
3. Twist mounting leg towards oven cavity to release mounting tab.
4. Push assembly towards back of oven to remove.

Note: New replacement switch assembly has been adjusted at the factory, no adjustment should be necessary.



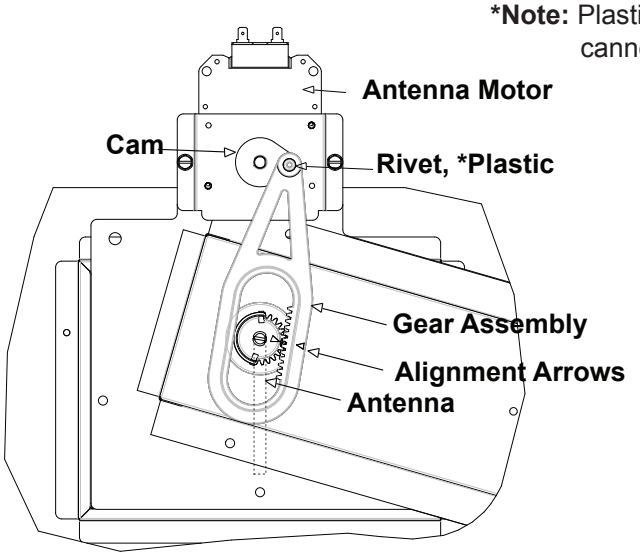
OVEN CONSTRUCTION-

Antenna Motor
Cam
Gear Assembly
Antenna
Rivet, Plastic
Radiant Heater



Note: Requires 15/16" (26mm) Deep Socket

***Note:** Plastic Rivet cannot be reused.

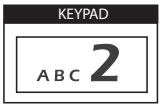


OVEN PERFORMANCE TEST

Note: To run Oven Performance Test the, OVEN CAVITY MUST BE AT ROOM TEMPERATURE, and the display must read MICROWAVE ONLY mode. See below using oven as a microwave oven. If MICROWAVE ONLY is not in display you must go to User Options and activate MICROWAVE ONLY option.

Changing User Options:

1. Oven must be OFF.
2. Press and hold Pad "2" for 5 seconds.



3. Rotate dial to highlight: ALLOW MICROWAVE ONLY mode.
4. Press SAVE.

USING OVEN AS A MICROWAVE OVEN

This option is only available if the oven cavity temperature is less than 200°F.

When user option MICROWAVE ONLY is set as a default, the MICROWAVE ONLY button appears on the PREHEAT MENU.

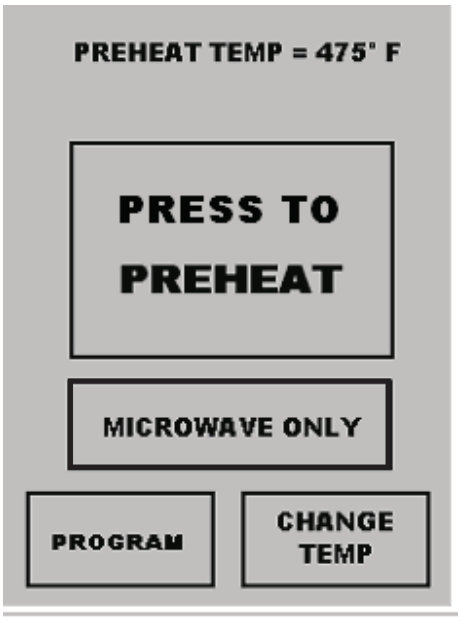
See page 14 for Oven Performance Test procedure.

To run Performance Test using microwave only follow these steps:

1. Place filled (1000 ml) test bowl in oven.
2. Press MICROWAVE ONLY button.

3. Press manual cook.
4. Press Pad 3 twice for 33 seconds.
5. Press Start.
6. Oven will beep, remove test bowl from oven.
7. Press OFF to return to PREHEAT MENU.

PREHEAT MENU



OVEN PERFORMANCE TEST

All Amana and Menumaster microwave oven power outputs are rated using the IEC705 standards. Using the IEC705 test method requires precision measurements and equipment that is not practical to be performed in the field. Using the test shown below will indicate if the oven performance is satisfactory.

Test equipment required:

- 1000 ml test container and thermometer.
- Digital watch / watch with a second hand for use on ovens with electromechanical timers.

Important Notes:

- Low line voltage will cause low temperature rise / power output.
- Ovens must be on a dedicated circuit, properly grounded, and polarized. Other equipment on the same circuit may cause a low temperature rise / power output.
- This test and results are not a true IEC705 test procedures and are only intended to provide servicers with an easy means of determining if the microwave oven cooking output is correct.

Procedure

1. Fill the test container to the 1000 ml line with cool tap water.

NOTE: Water temperature should be approximately 60°F / 16°C

2. Using the thermometer, stir water for five to ten seconds; measure, and record the temperature (T1).
3. Place test container of water in the center of oven cavity and close door.
4. Heat the water for a 33-second full power cycle.

NOTE: Use a digital watch or a watch with a second hand for ovens with electromechanical timers.

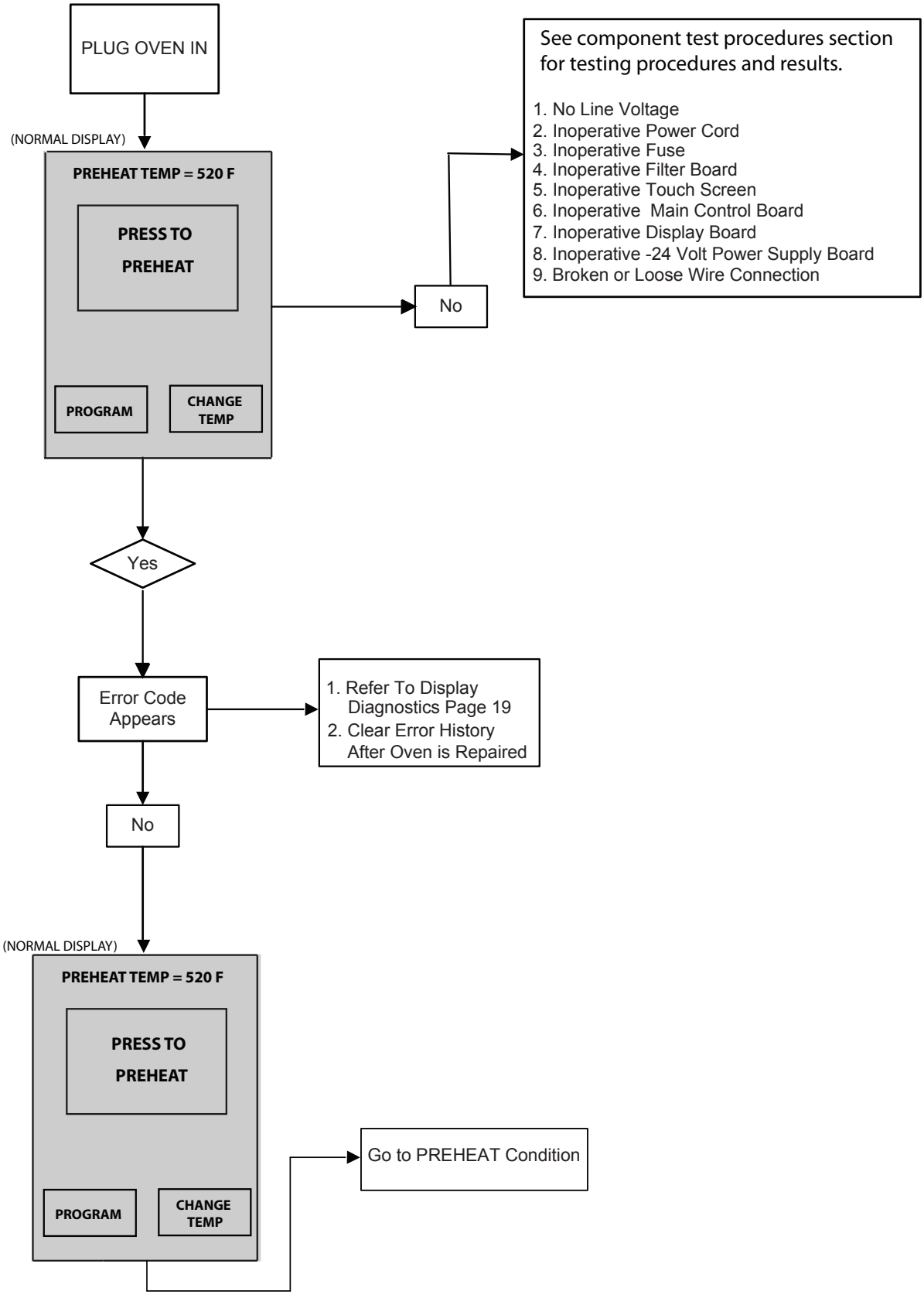
5. At end of the cycle, remove test container. Using the thermometer, stir water for five to ten seconds and record temperature (T2).
6. Subtract the starting water temperature (T1), from the ending water temperature (T2) to obtain the temperature rise (ΔT).
7. If the temperature rise (ΔT) meets or exceeds the minimum, the test is complete. If the temperature rise (ΔT) fails to meet the minimum temperature rise, test the line voltage to verify it is correct. Then repeat steps 1-6 making sure to change the water. If the temperature rise (ΔT) fails to meet the minimum temperature rise again the oven will require service.

Minimum Temperature Rise at Thirty -Three (33) Seconds Run Time

ΔT (°F)	Cooking Power Output	ΔT (°F)	Cooking Power Output	ΔT (°C)	Cooking Power Output	ΔT (°C)	Cooking Power Output
10	1000	20	2000	5	1000	11	2000
11	1100	21	2100	5.5	1100	11.5	2100
12	1200	22	2200	6.5	1200	12	2200
14	1400	24	2400	7.5	1400	13	2400
17	1700	25	2500	9.5	1700	13.5	2500
18	1800	27	2700	10	1800	15	2700
19	1900	30	3000	10.5	1900	16.5	3000

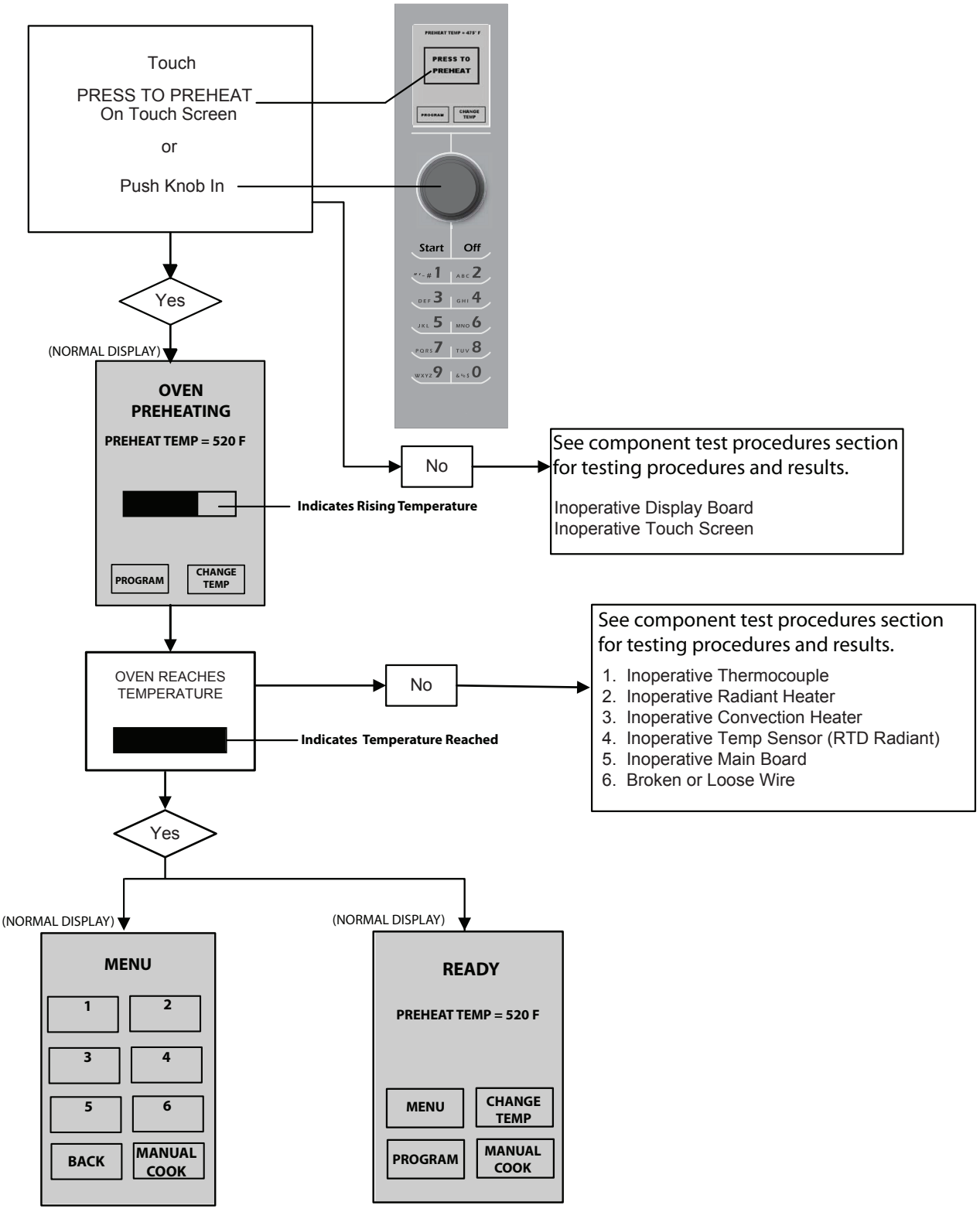
Troubleshooting

POWER UP CONDITION



Troubleshooting

PREHEAT CONDITION



Troubleshooting

MICROWAVE CONDITION

SERVICE TEST
1. Press Off Pad Repeatedly Until Press to Preheat Appears
2. Press Hidden Pad
3. Press Pads 1-3-5-7-9

Yes

(NORMAL DISPLAY)

SERVICE MODE

OVEN INFORMATION

DISPLAY VERSION: 0.39
MAIN VER: 0.46 EE 0.3
DOOR CYCLES 20,156
TUBE HRS: 2156 EE 255

NEXT TEST | PREV TEST | EXIT | CLEAR INFO

No → See component test procedures section for testing procedures and results.
Inoperative Touch Panel
Inoperative Touch Screen

PRESS NEXT TEST

(NORMAL DISPLAY)

SERVICE MODE

MAGNETRONS #1 & #2

MAGNETRON #1: 0 AMPS
MAGNETRON #2: 0 AMPS
ACCEPTABLE RANGE:

NEXT TEST | PREV TEST | CANCEL | TURN ON

No → See component test procedures section for testing procedures and results.
Inoperative Touch Screen

Yes

PRESS TURN ON

No → See component test procedures section for testing procedures and results.
Inoperative Main Board

COOLING FANS TURNS ON

Yes

MAGNETRON #1: 5-12 AMPS
MAGNETRON #2: 5-12 AMPS

No → See component test procedures section for testing procedures and results.

1. Inoperative Power Relay
2. Inoperative Primary Switch
3. Inoperative Secondary Switch
4. Fuse (F3)
5. Fuse (F4)
6. Inoperative Triac
7. Inoperative Main Board
8. Inoperative Capacitor
9. Inoperative Diode
10. Inoperative H.V. Transformer

Yes

Troubleshooting

OPERATIONAL CODES

During oven operation the display may indicate one of the following:

CALL SERVICE

CODE G0

1. When you press the pad/ knob to preheat the oven the display indicates.
2. During cooking, the oven display indicates.

1. Unplug / plug oven in
2. If code continues to appear. Replace Electronic Limiter

DOOR

OPEN

1. After food is placed in the oven the door is closed the display indicates.

See component test procedures section for testing procedures and results.

1. Inoperative Monitor Switch
2. Interlock Switch Assembly out of adjustment
3. Broken or loose wire connection

CLOSE DOOR

PLACE FOOD

IN OVEN

1. After food is placed in the oven the door is closed the display indicates.

See component test procedures section for testing procedures and results.

1. Interlock Switch Assembly out of adjustment
2. Inoperable Monitor Switch
3. Broken or loose wire connection

Troubleshooting

OPERATIONAL CODES

OVEN NOT AT PREHEAT TEMPERATURE

1. At the end of a cook cycle and the food is removed and the door is closed the display indicates.
2. When a pad is pressed the display indicates.

→ Change Option Code #10 to OFF

CLEAN FILTER

1. Normal do not service the oven for this.

→ Option #12 This is activated at the factory.
It will appear every 7 days.
Note: Customer can change this option as desired. See Quick Start Reference Guide section.

CHECK DOOR RESTART PROGRAM

→ See component test procedures section for testing procedures and results.
1. Door not fully closed.
2. Inoperative Power Relay.
3. Inoperative Primary Interlock Switch.
4. Inoperative Secondary Interlock Switch.
5. Secondary Interlock Switch out of Adjustment.
6. Broken or Loose Wire Connection.
7. Inoperative HV System (Magnetron).

CHASSIS MEMORY ERROR

→
1. Unplug the oven and remove right side panel.
2. Disconnect the data key board connector from the display board (Figure 1).
3. Plug the oven in (See Caution below).
4. Carefully reinstall data keyboard connector onto the display board.
5. Press and hold Pad 2 (The display will indicate user options).
6. Press Save pad.

Note: If chassis memory error returns replace data keyboard.

Data Key Connector

Figure 1

⚠ CAUTION

Oven is energized, use care when plugging connector into data key board.

Display Diagnostics

Error Codes

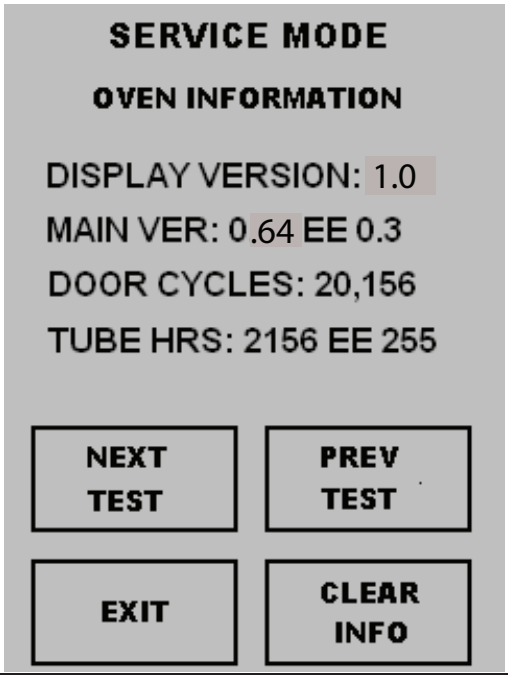
Display	Description	Corrective Action
B0	Touch Panel	Replace Touch Panel
B1	Touch Panel	Replace Touch Panel
C-0	Temp Sensor (RTD) (open)	Replace Temp Sensor
C-1	Temp Sensor (RTD) (shorted)	Replace Temp Sensor
C-2	Temp Sensor (RTD) (out of range)	Replace Temp Sensor
D-0	Thermocouple (RTD) (open)	Replace Thermocouple
D-1	Thermocouple (RTD) (shorted)	Replace Thermocouple
D-2	Thermocouple (RTD) (out of range)	Replace Thermocouple
G-0	Oven Exceeded Max. Temp.	Unplug / Plug oven in*
G-2	Magnetron TCO	Perform service test (Magnetron #1 & #2)
G-2	Cooling Motor	Perform service test (Cooling Fan)
H-0	Signal Missing	Plug disconnected from J1 on main board
H-1	Main Board Set Point Incorrect.	Unplug / Plug oven in
H-2	Main Board	Replace main board
H-3	Main Board	Replace main board
M-0	Current Sense Low Amps	Perform service test (Magnetron #1 & #2)
M-1	Magnetron 1 Low Amps	Perform service test (Magnetron #1)
M-2	Magnetron 2 Low Amps	Perform service test (Magnetron #2)

Note: While in the service test the error history can be cleared by pressing and holding Pad 1 see page 28.

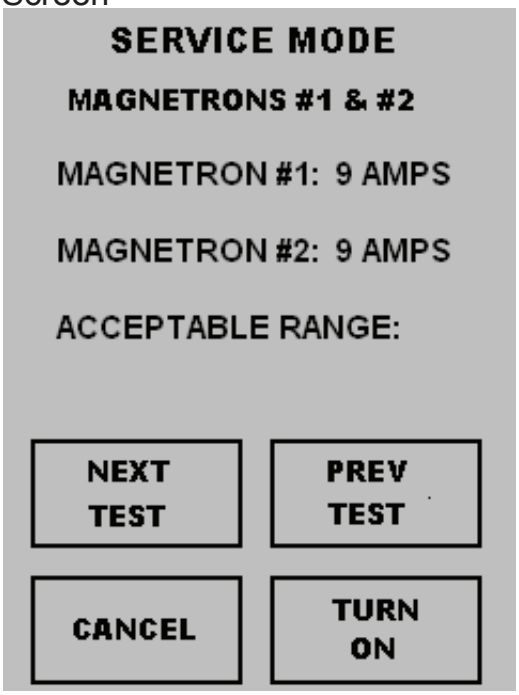
*If G-0 continues to appear. Replace Electronic Limiter.

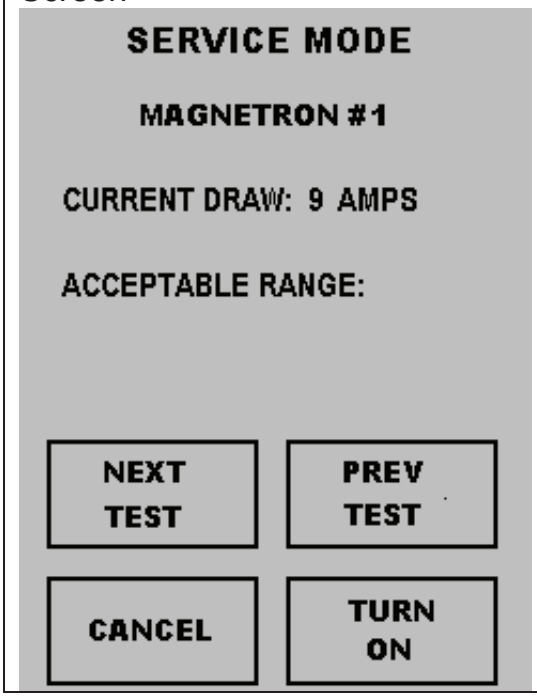
Service Test

Access to Service Mode	
Screen 	While at the Main Screen, press the following sequence on the keypad: **NOTE:** The "MICROWAVE ONLY" button may or may not be present. 1. Press OFF pad until PRESS TO PREHEAT appears. 2. Press Hidden Pad. 3. Press pads 1 - 3 - 5 - 7 - 9 The display indicates SERVICE MODE.

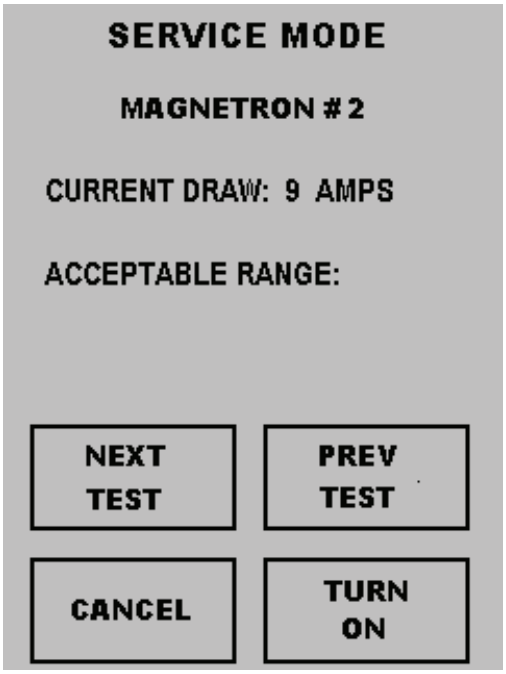
Oven Information	1
Screen  	This screen is Oven Information showing the versions of software in the control boards and information about door cycles and tube hours. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **CLEAR INFO:** Press this pad to reset the Door Cycles and Tube Hours back to zero. **EXIT:** Press this pad to return to the ovens Main Menu

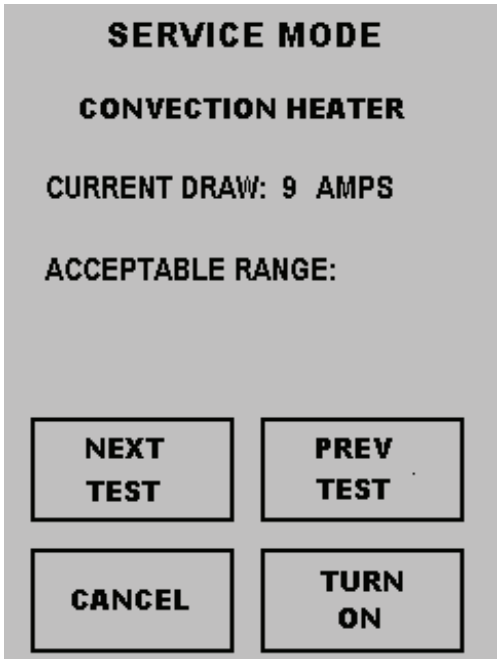
Service Test

Manual Operation of Magnetrons #1 & #2	2
Screen 	This screen will allow operation of Magnetron #1 and #2 together and show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the magnetrons on and off. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, each mag's amp draw should be **5 – 12 amps.**

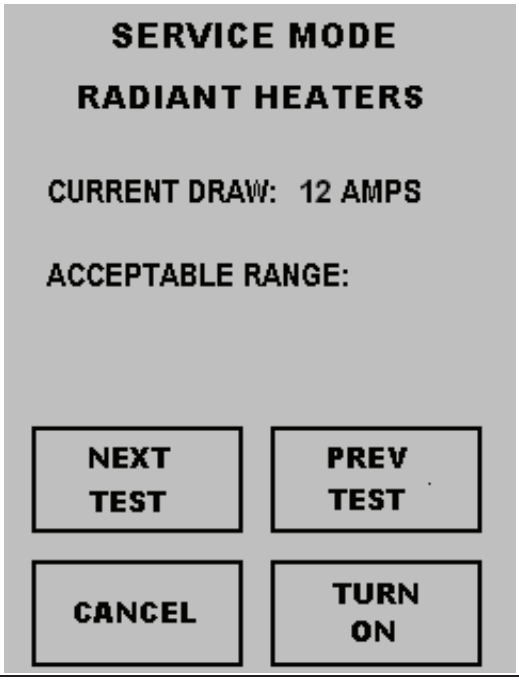
Manual Operation of Magnetron #1	3
Screen 	This screen will allow operation of Magnetron #1 and show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the magnetron on and off. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw should be **5 – 12 amps.**

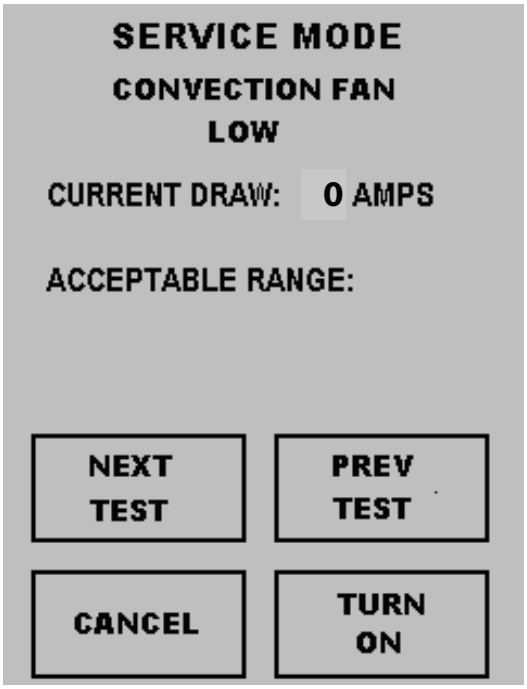
Service Test

Manual Operation of Magnetron #2	4
Screen 	This screen will allow operation of Magnetron #2 and show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the magnetron on and off. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw should be **5 – 12 amps.**

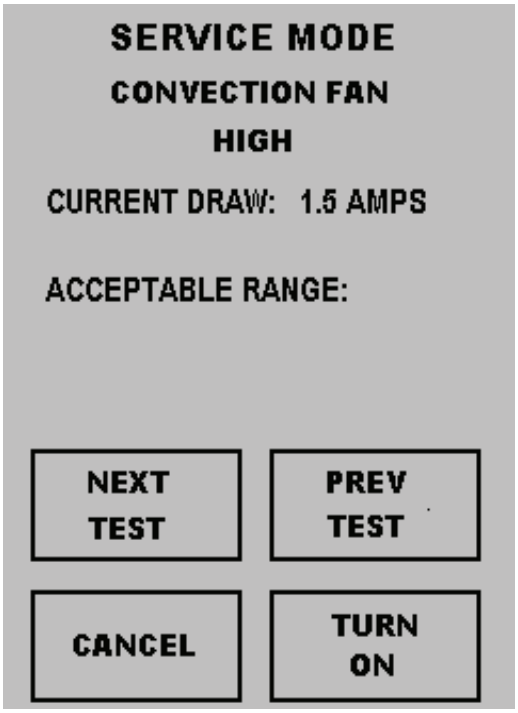
Convection Heater	5
Screen 	This screen will allow operation of the convection heater and show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the heater on and off. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw should be **5 – 12 amps.**

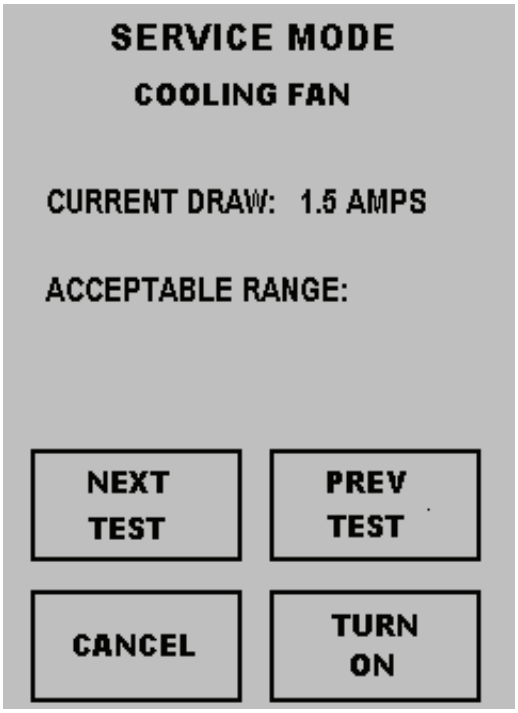
Service Test

Radiant Heater	6
Screen 	This screen will allow operation of the radiant heater and show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the heater on and off. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw should be **10 – 16 amps.**

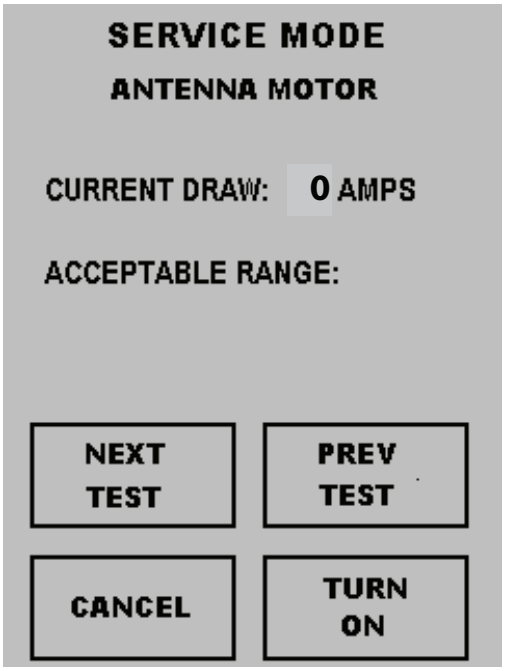
Convection Fan – Low Speed	7
Screen 	This screen will allow operation of the convection fan at a low speed and show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the convection fan on and off at a low speed. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw is too low to read.

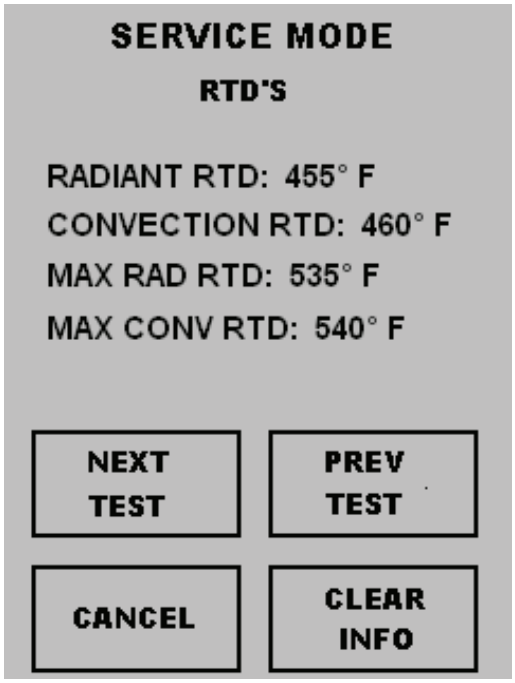
Service Test

Convection Fan – High Speed	8
Screen  	This screen will allow operation of the convection fan at a high speed and show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the convection fan on and off at a high speed. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw should be **0.6 – 2.6 amps.** (It may not read amps)

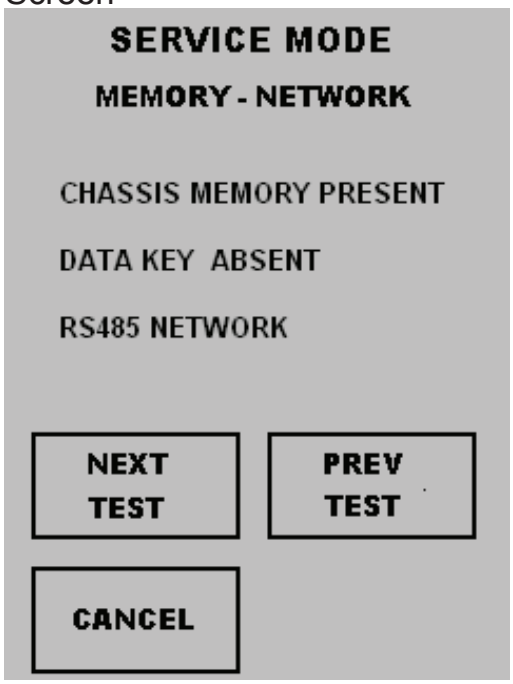
Cooling Fan	9
Screen  	This screen will allow operation of the cooling fan show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the cooling fan on and off. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw should be **0.9 – 2.5 amps.** (It may not read amps)

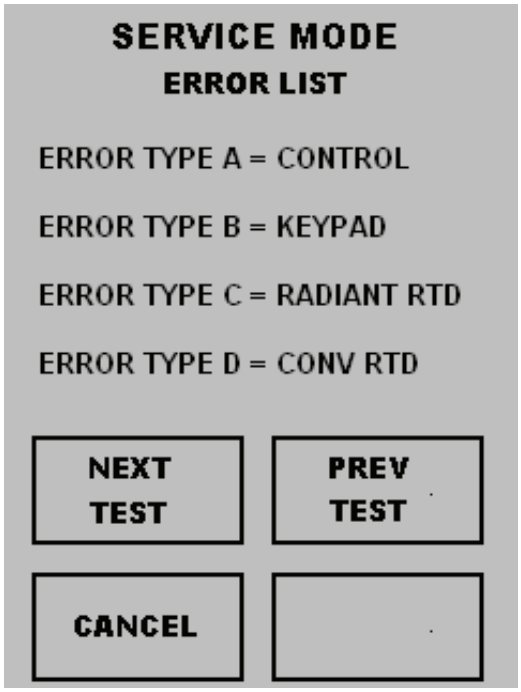
Service Test

Antenna Motor	10
Screen  	This screen will allow operation of the antenna motor show the number of amps being drawn. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **TURN ON:** This pad will toggle between turning the antenna motor on and off. **CANCEL:** Press this pad to return to the Main Menu **RANGE:** Under normal operation, the amp draw may be to low to read.

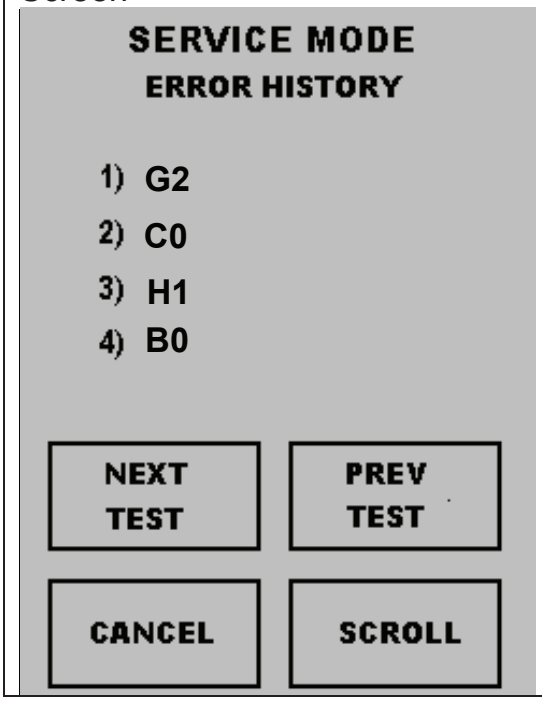
RTD Status	11
Screen  	This screen will show the temperatures being reported to the RTD's in the oven. The maximum temps seen by the controller are also recorded for diagnostic purposes. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **CANCEL:** Press this pad to return to the Main Menu **CLEAR INFO:** Press this pad to reset the Maximum RTD temps to zero.

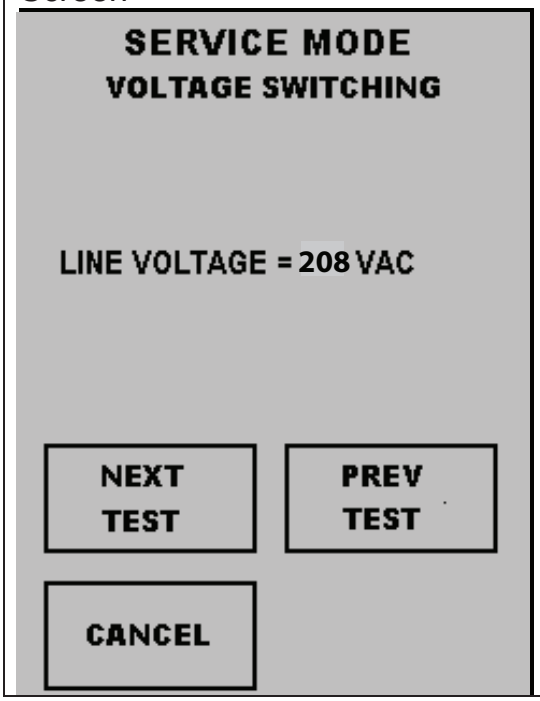
Service Test

Memory / Network Status	12
Screen 	This screen will show which memory chips are present and if the oven is hooked up to an external network. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **CANCEL:** Press this pad to return to the Main Menu

Error List	13
Screen 	This screen will show a description of the types of errors that can occur. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **CANCEL:** Press this pad to return to the Main Menu

Service Test

Error History	14
Screen 	This screen will show the previous error codes that have occurred in the oven. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **SCROLL:** This pad will advance through the history of the error codes. (1-10) **CANCEL:** Press this pad to return to the Main Menu **Note:** To clear codes: Press and hold Pad 1 until Code(s) disappear.

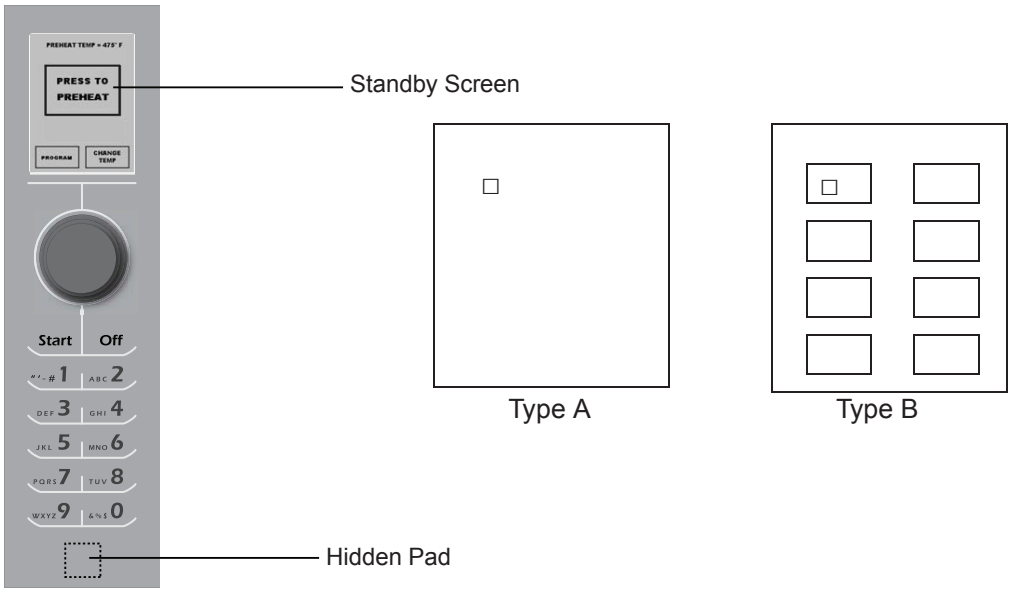
Voltage Switching	15
Screen 	This screen will show the line voltage detected by the oven. **NEXT TEST:** Press this pad to go to the next Service Mode Test **PREV TEST:** Press this pad to go to the previous Service Mode Test **CANCEL:** Press this pad to return to the Main Menu

Calibration

Touch Screen Calibration

To calibrate the touch screen perform the following steps.

1. The oven must be plugged In.
2. Stand-by screen must be in the Display.
3. Press the **Hidden Pad.**



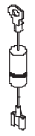
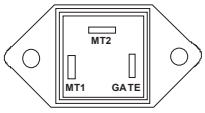
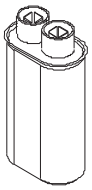
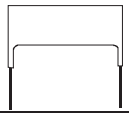
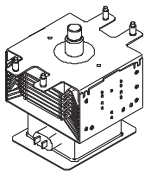
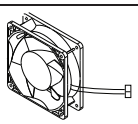
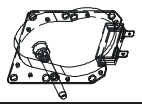
4. Press Pads 4, 5, 6.
5. Press Directly ON small Square in the Display.
   The Square will move to a different location on the Display.
6. Press Directly On the small Square in the Display again until the square disappears.
7. Press the 0 Pad.
8. A small box will appear in the top left square. Press on each box and the small square will follow. After you have touched all the boxes and the small square followed you go to step 9.
9. Press the 0 pad to return to the Stand-by screen.

Note: If the small square did not follow you to each square repeat each square.

Component Testing Procedures

⚠ WARNING

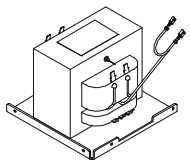
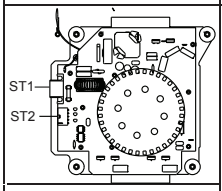
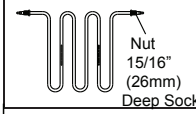
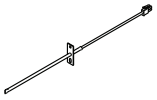
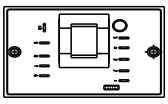
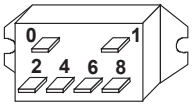
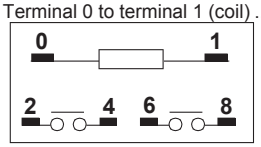
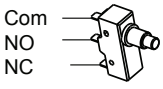
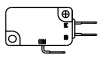
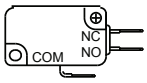
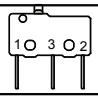
To avoid risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitor before servicing, unless testing requires power.

Illustration	Component	Test	Results
	Thermal cutout	Disconnect all wires from TCO. Measure resistance across terminals. Magnetron TCO	 Open at 300°F (149°C) and closed at 257°F (125°C)
	Diode	**Discharge Capacitor** Remove diode lead from capacitor and connect ohmmeter. Reverse leads for second test.	Infinite resistance should be measured in one direction and 50KΩ or more in the opposite direction. **NOTE:** Ohmmeter must contain a battery of 6 volts minimum.
 Triac (TR1) (TR2) (TR3) (TR4)	Triac	Disconnect wires to triac. Measure resistance from: MT1 to MT2..... MT1 to Gate ..... MT2 to Gate ..... All terminals to ground ..... Measure voltage from: MT1 to Gate	**Caution - Do not operate oven with wire to terminal MT2 removed.** Infinite Approximately 15 Ω, then reverse meter leads 30 Ω Infinite Infinite 0.8 VAC when energized. If no voltage, check H.V. board and wiring.
	Capacitor	**Discharge Capacitor** Remove wires from capacitor terminals and connect ohmmeter, set on highest resistance scale to terminals. Also check between each terminal and capacitor case.....	 Between Terminals: Meter should momentarily deflect towards zero then return to over 5 MΩ. If no deflection occurs, or if continuous deflection occurs, replace capacitor. Terminal to Case: Infinite resistance
	Snubber assembly	Disconnect wires to snubber. Measure resistance across terminals.....	 Infinite
	Magnetron	**Discharge Capacitor** Remove wires from magnetron and connect ohmmeter to terminals. Also check between each terminal and ground.	Between Terminals: Less than 1 Ω Each terminal to ground measures Infinite resistance. **Note:** This test is not conclusive. If oven does not heat and all other components test good replace the magnetron and retest.
	Cooling blower motor	Measure voltage at motor Measure resistance across leads.....	Approximately 24 vdc at incoming leads Approximately 24K Ω at incoming leads
	Stirrer motor	Remove all wires from terminals. Measure resistance from: Terminal to terminal.....	 Approximately 29K Ω

Component Testing Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitor before servicing, unless testing requires power.

Illustration	Component	Test	Results
	Transformer	**Discharge Capacitor** Remove all wires from terminals. Measure resistance from: 230 to COM..... 208 to COM..... 230 to Ground..... 208 to Ground..... Terminal 5 to 6..... Terminal 4 to Ground.....	 Less than 1 Ω Less than 1 Ω Infinite Infinite Less than 1 Ω Approximately 46 Ω
	Convection blower motor	Use Service test to verify operation ST1-1 to ST1-3 BK BU ----- ST2 GN - YL - OR -BU-----	 Line Voltage Disconnect ST2 Fan should operate at High Speed
	Convection heating element	Disconnect wires from terminals. Measure resistance across heating element. Element 2000 W	 Approximately 19 - 22 Ω
	Radiant heating element	Disconnect wires from terminals. Measure resistance across heating element. Element 3000 W	 Approximately 14 Ω
	Resistance thermal device (RTD)	Temperature 32°F (0°C) ..... 350° (177°C)	Resistance 1000 Ω 1654 Ω
	Limiter **Note:** Unit must have power applied to test Limiter.	Red - Orange Lead Terminals ..... Yellow - Yellow Leads disconnected from Limiter ..... Terminal 6 - Terminal 7	Line Voltage 24vdc across yellow leads (Polarity must be correct) 0 Ω Indicates continuity
	Relay (Power) This relay contains a diode in the coil circuit.	Measure resistance from: Terminal 0 to terminal 1 (coil) ..... 	Approximately 6 to 7 M Ω **NOTE:** Analog meter is recommended for measurement. **NOTE:** If using a digital meter it must contain a battery of 6 volts minimum.
Wire harness	High voltage board to display module harness	Test continuity of wires.....	Indicates continuity
	Primary switch		NC to Com Indicates continuity NO to Com Indicates infinity
	Secondary switch		NC to Com Indicates continuity NO to Com Indicates infinity
	Monitor Interlock switch		1 to 2 Indicates continuity 1 to 3 Indicates infinity
	Transformer, control (AXP20QT Only)	(1) RD to (5) OR ----- (6) BR to (10) VT -----	Approximately 40 Ω or Line Voltage Approximately 1 Ω or 28 vac

Quick Start Reference Guide | High Speed Commercial Combination Oven

Refer to Product Safety Manual for Safety Statements. *Complete Owner's Manual available online*

Oven Controls

The oven touch screen displays menu options. The dial, keypad and touch screen can be used to navigate through onscreen menus. **This guide will focus primarily on the dial control for menu navigation.**

Dial Menu Navigation
1. Rotate the dial clockwise to scroll through menu options.
2. The current menu selection will be highlighted.
3. To select menu item, press dial.

The icons below will be used throughout this guide to indicate when menu navigation other than the dial is necessary.

Selecting a Function

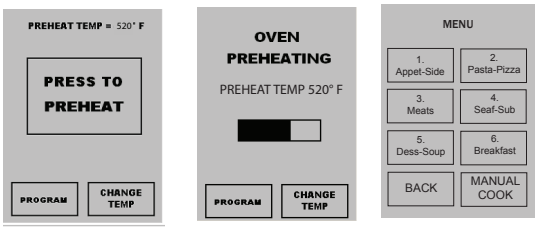
Highlight menu items by rotating the dial. Push the dial to select.

Getting Started

Preheating the Oven

This oven can be set to a preheat temperature between 200°F and 520°F (95°C and 270°C).

1. Oven must be plugged in.
2. The Preheat Temperature the oven is set to will appear at the top of the display.
2. Rotate the dial to highlight the PRESS TO PREHEAT button and press to select.
3. Oven Preheating status menu will display until oven reaches preheat temperature. The main menu screen will then appear.



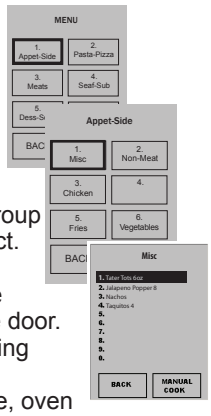
Programming or Changing Preheat Setting

To program the preheat setting:

1. Oven must be plugged in.
2. Rotate dial until CHANGE TEMP is highlighted and press dial to select.
3 Rotate dial until desired temperature is displayed and press knob to select.

Cooking with Pre-programmed Pads

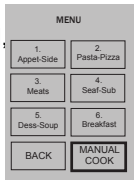
To cook food using pre-programmed menu items



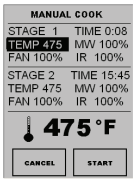
1. After oven has preheated to the desired temperature, highlight desired menu category by rotating the dial and press to select.
2. Highlight menu item group and press dial to select.
3. Highlight item.
4. Open oven door, place food in oven and close door.
5. Push dial to start cooking process.
6. At end of cooking cycle, oven beeps and displays "DONE. REMOVE FOOD FROM OVEN"

Using MANUAL COOK

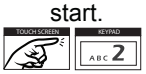
To cook food using a specific entered time and power level.



1. After oven has preheated, Select MANUAL COOK option on the menu screen by rotating dial and press to select.



2. For Stage 1, input desired cooking time using the dial. Press dial.
3. Input desired temperature. Press dial.
4. Rotate dial until desired microwave cooking power is displayed and press.
5. Rotate dial until desired cooking fan speed is displayed. Press to select.
6. Rotate dial until desired heating setting is diplayed and press.
7. Repeat steps 2-6 for each cooking stage, if more than one stage is necessary.
8. Place food in oven as indicated on the oven display.
9. Press start pad or touch screen to start.



10. At end of cooking cycle, oven beeps and displays "DONE. REMOVE FOOD FROM OVEN".

Note: To interrupt cooking cycle, open door. To resume cooking, close door and press start.

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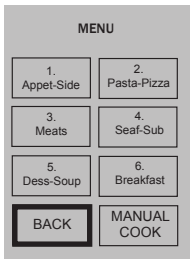
ACCESSING THE PROGRAM MENU

1. To access the PROGRAM MENU, select the BACK button on the main menu screen.

2. Then select PROGRAM from the READY screen.

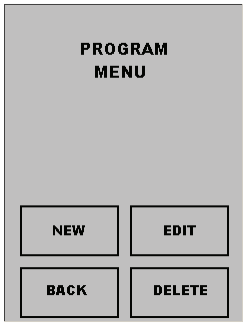
1



2

PROGRAM MENU OVERVIEW

NEW – Add a new menu item
BACK – Go to previous screen
EDIT – Change an existing menu item
DELETE – Delete an existing menu item



ADDING OR CHANGING MAIN MENU LEVEL OR ITEM GROUP MENU

1. From PROGRAM MENU rotate dial to select NEW to add an item or EDIT to edit an existing menu item.

2. From the MENU or MENU ITEM GROUP screen select EDIT MENU (border will flash).

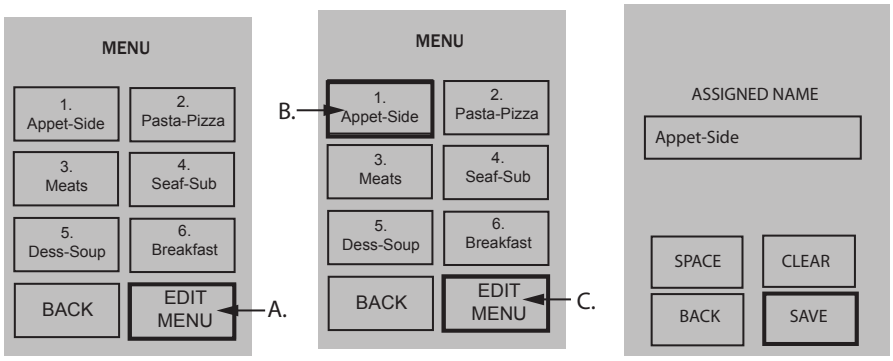
3. Using the dial, highlight pad you wish to program or edit and press dial to select.

4. Enter name for menu using keypad digits for letters, numbers and symbols. **[For example: Press Keypad "2" three times for letter "c"]** When the correct letter is displayed, wait until cursor moves to the next space. If a correction is necessary, press CLEAR to erase one character at a time.

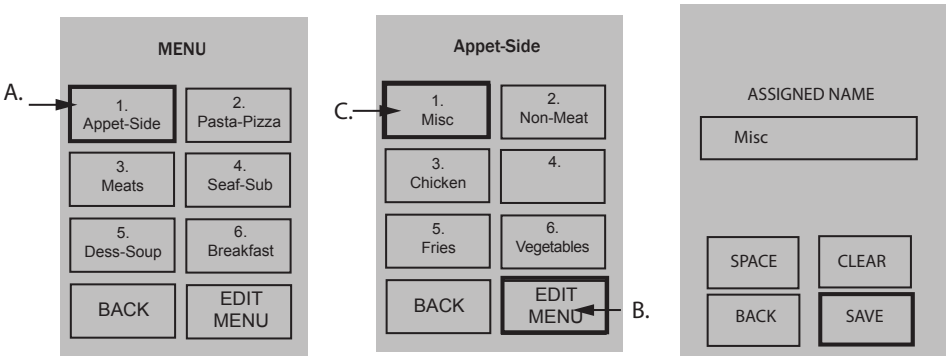
Keypad Press	Character Display
1	", ', -, #, 1
2	a, b, c, A, B, C, 2
3	d, e, f, D, E, F, 3
4	g, h, i, G, H, I, 4
5	j, k, l, J, K, L, 5
6	m, n, o, M, N, O, 6
7	p, q, r, s, P, Q, R, S, 7
8	t, u, v, T, U, V, 8
9	w, x, y, z, W, X, Y, Z, 9
0	&, %, $, 0

4. Highlight SAVE button and press dial to select when item is complete. If you do not wish to save the entry, press the back button to return the oven to Program Edit without saving.
5. Press BACK button to return to READY display.

EDITING MAIN MENU CATEGORY SCREEN

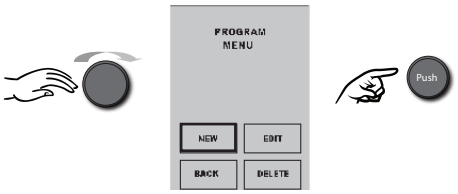


EDITING FOOD CATEGORY SCREEN

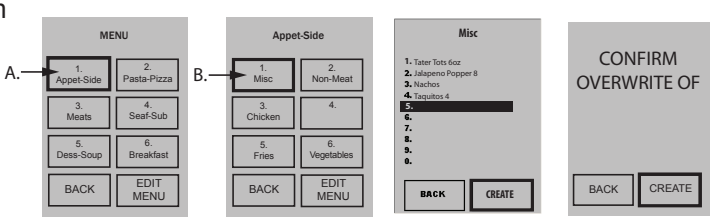


ADDING ITEM TO ITEM MENU

1. Select NEW from the PROGRAM MENU.to add a new item or EDIT to edit item.
2. Select category you wish to change from MAIN MENU and ITEM GROUP Menus.
3. At the ITEM MENU, rotate dial until until item to be added or changed is highlighted and press dial. The confirm screen will appear and ask you to confirm the change you're making. Touch CREATE or press knob to CONFIRM OVERWRITE. Note - When editing an item the CONFIRM OVERWRITE screen does not appear.

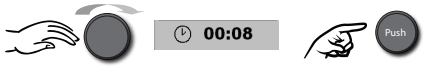


CREATING NEW ITEM GROUP



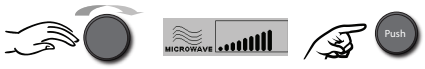
The cooking program menu will appear

4. For Stage 1 rotate the dial to input desired time.

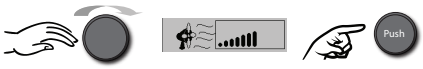


5. Input desired temperature.

6. Input desired microwave power

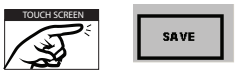


7. Input desired fan speed



8. Input desired (IR) heating setting.

9. Press SAVE button on screen.

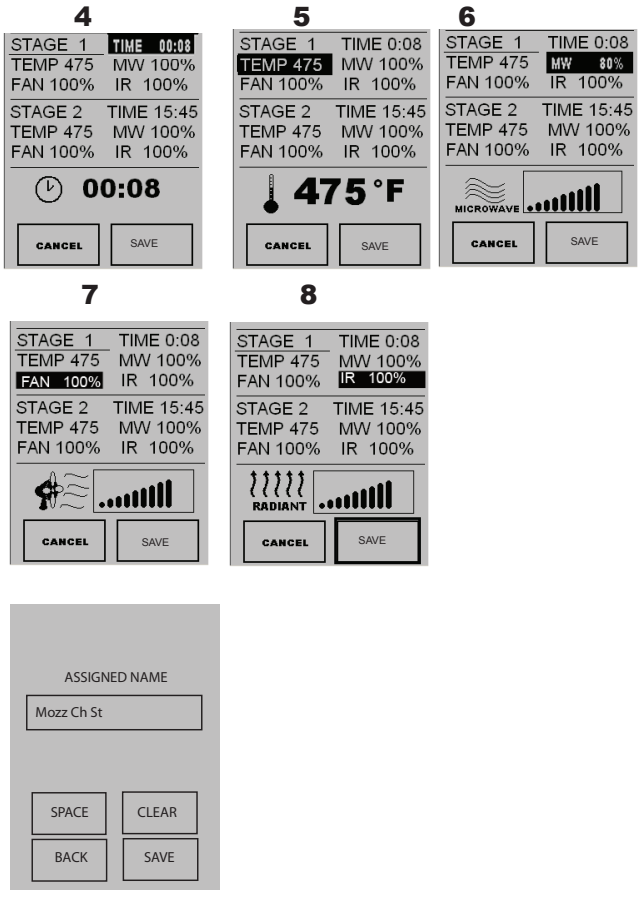


If necessary, repeat steps 4 through 8 for stages 2, 3, and 4.

10. Enter Item Names using letters on keypad and touch SAVE.

Keypad Press	Character Display
1	", ', -, #, 1
2	a, b, c, A, B, C, 2
3	d, e, f, D, E, F, 3
4	g, h, i, G, H, I, 4
5	j, k, l, J, K, L, 5
6	m, n, o, M, N, O, 6
7	p, q, r, s, P, Q, R, S, 7
8	t, u, v, T, U, V, 8
9	w, x, y, z, W, X, Y, Z, 9
0	&, %, $, 0

COOKING PROGRAM MENU



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Refer to Product Safety Manual for Safety Statements. *Complete Owner's Manual available online*

Changing User Options

There are several option you can change to customize the operation of the oven for your business. The table below shows these options; the factory setting is shown in bold type.

1. Oven must be off. To turn oven off, press OFF button on Keypad.

2. Press and hold "2" keypad for three seconds.
3. Choose option by turning dial to highlight desired option. Press knob and the next option will be highlighted.
4. Press SAVE when finished.

Option #	Setting Name	Options
1	Digit Entry	**Single digit entry**
		Double digit entry
2	Menu Setting	1 Level
		2 Levels
		3 Levels
3	Manual Lock	**Manual cooking allowed**
		Manual cooking not allowed
4	Program Lock	**Changes to programs allowed**
		Password needed
5	Door Open	Opening door resets timer
		Opening door pauses cook cycle
6	Keybeep	Off
		On
7	Keybeep Volume	Low
		Medium
		High
8	End of Cycle Beep	Continuous until door is opened
		Three beeps once
		Three beeps repeating
9	Keyboard Window	Off
		30 Seconds
		60 Seconds
		120 Seconds
10	Preheat Warnings	**Off**
		Warn if oven not at temp
11	Temperature Scale	Temperatures are displayed in ºF for 60 Hz models
		Temperatures are displayed in ºC for 50 Hz models
12	Clean Filter	Off
		Displays every 7 days
		Displays every 30 days
		Displays every 90 days
13	Auto Menu	From Preheat, go to Ready
		From Preheat, go to Menu
14	Magnetron Control	**No individual tube programming**
		Individual Tube Programming
15	Microwave Only Mode	**No microwave only mode**
		Allow microwave only mode
16	Manual Program Save	Do not save after manual cook
		Save after manual cook
17	Automatic Shut Off	2 Hours
		4 Hours
		8 Hours
		Disable
18	Data Transfer	**Begin Transfer: Card to Oven**
		Begin Transfer: Oven to Card
19	Preheat Temperature*	Enter Temperature in 5° increments 200°F (95°C) - 520°F (270°C)

* Option 19 not on all models

CLEAN FILTER

When this message displays, clean the air filter thoroughly. **Cleaning the air filter will not shut off the message.** The message will automatically stop displaying after 24 hours.

Depending on microwave use and environmental conditions, the filter may need to be cleaned more or less frequently. Once the frequency is determined, set the option for the appropriate time frame.

Air filter and vents must be cleaned regularly to prevent overheating of the oven. Refer to Owner's Manual for complete cleaning instructions.

AXP / MXP EZCard Programming

To program the oven using the EZCard:

Oven must be in Standby mode (Preheat must be OFF)

1. Open protective cover from bottom of keypad.
2. Insert the EZCard into the slot located below the vertical keypad.

Note: The EZCard can be inserted forwards or backwards.

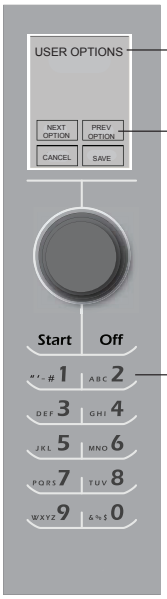
3. From Standby, press and hold the “2” pad to go to “User Options”.
4. Go to Option #18 by pressing “Prev Option” on the screen or repeatedly pressing “Next Option”
5. Select the desired operation by highlighting “Transfer card to oven” or “Transfer oven to card” with the knob.
6. Press the “Start” pad to begin the transfer (The screen will indicate transferring and indicate done when transfer is complete.)
7. Press the SAVE pad to complete the process.

Note: You can exit from programing the oven by pressing “off” keypad.

8. Remove EZCard and close the protective cover.

Standby Mode

Protective Cover



User Options

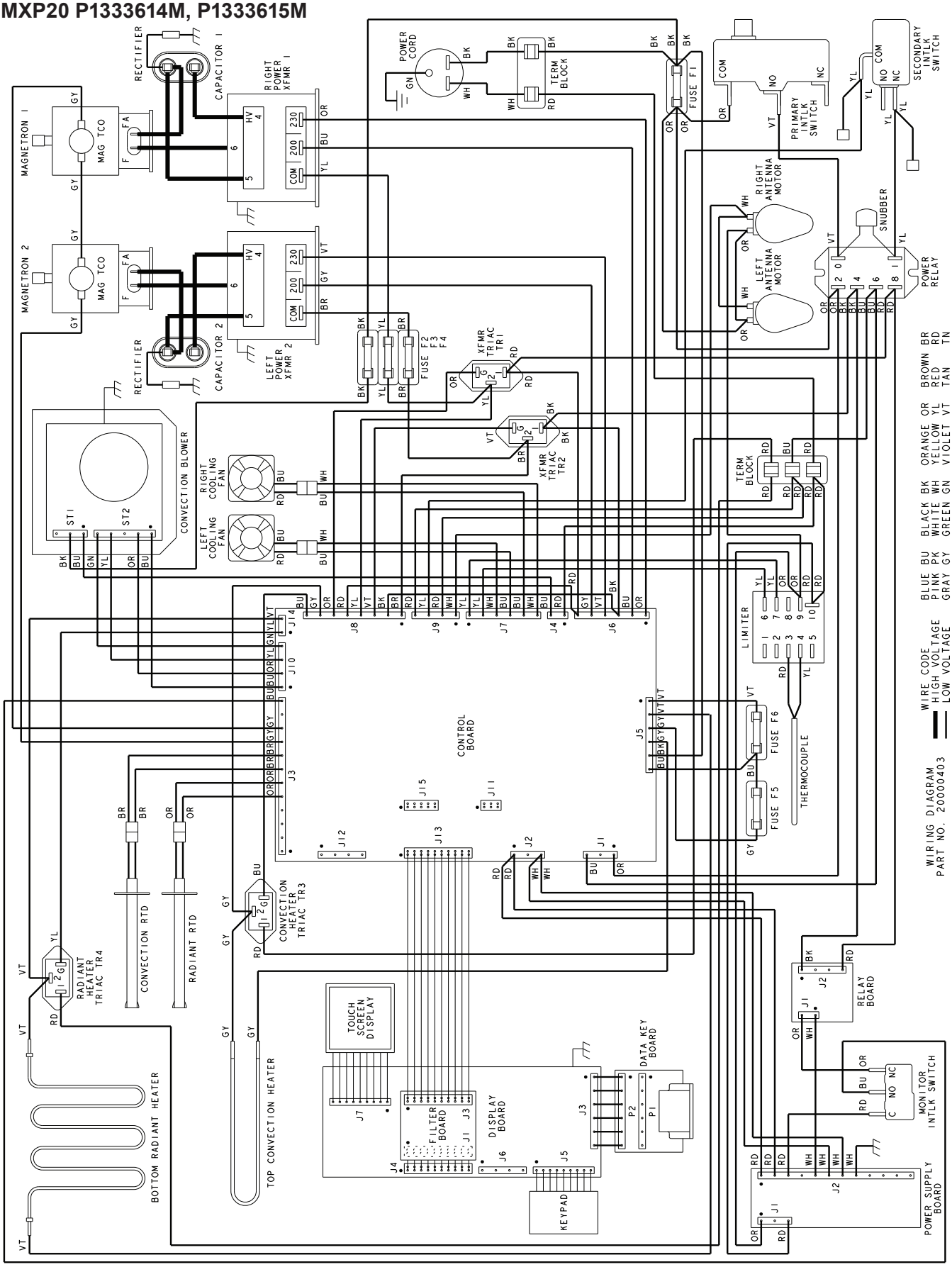
Previous Options

Press and Hold 2

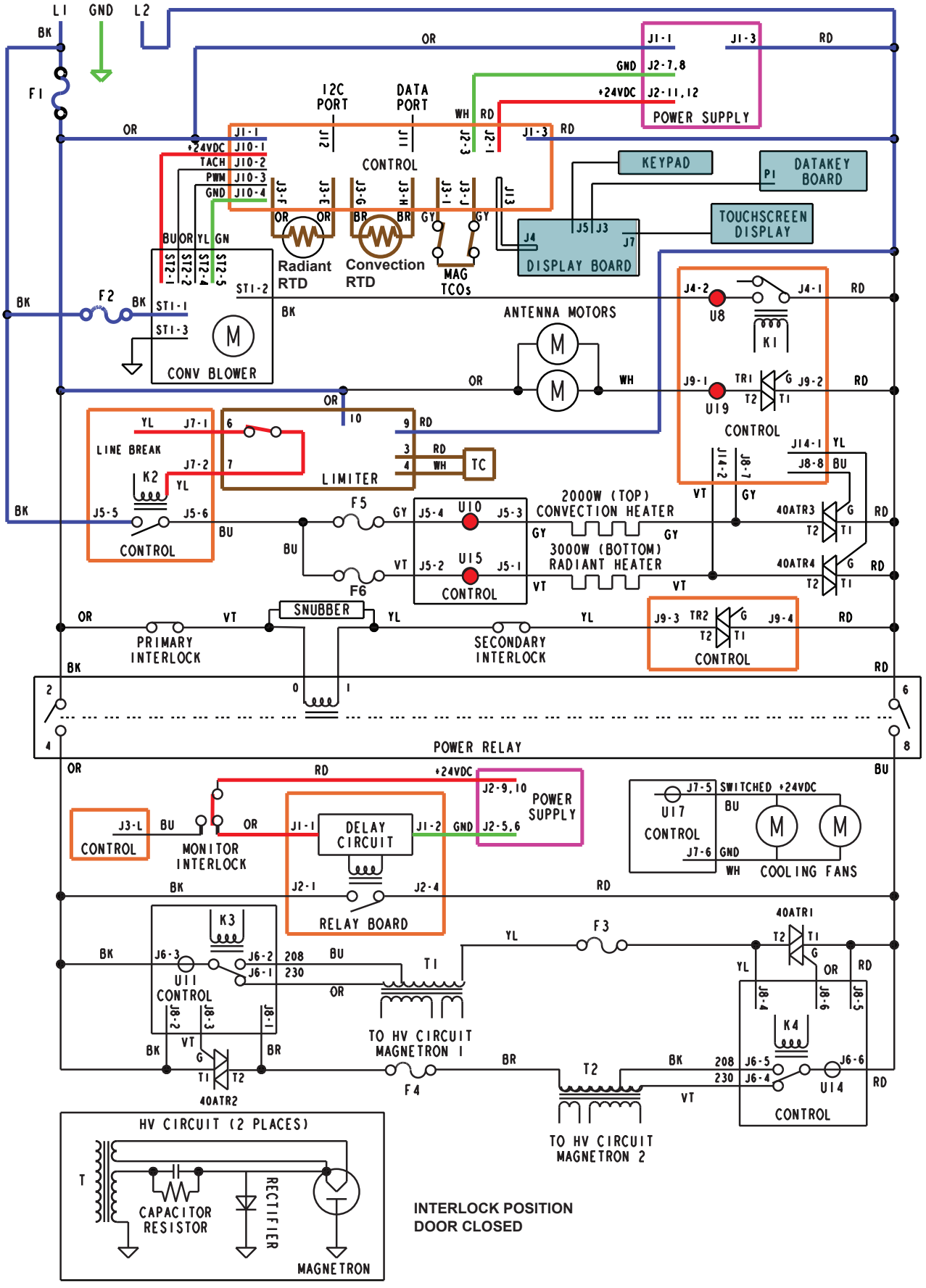
Press Start

Press Save

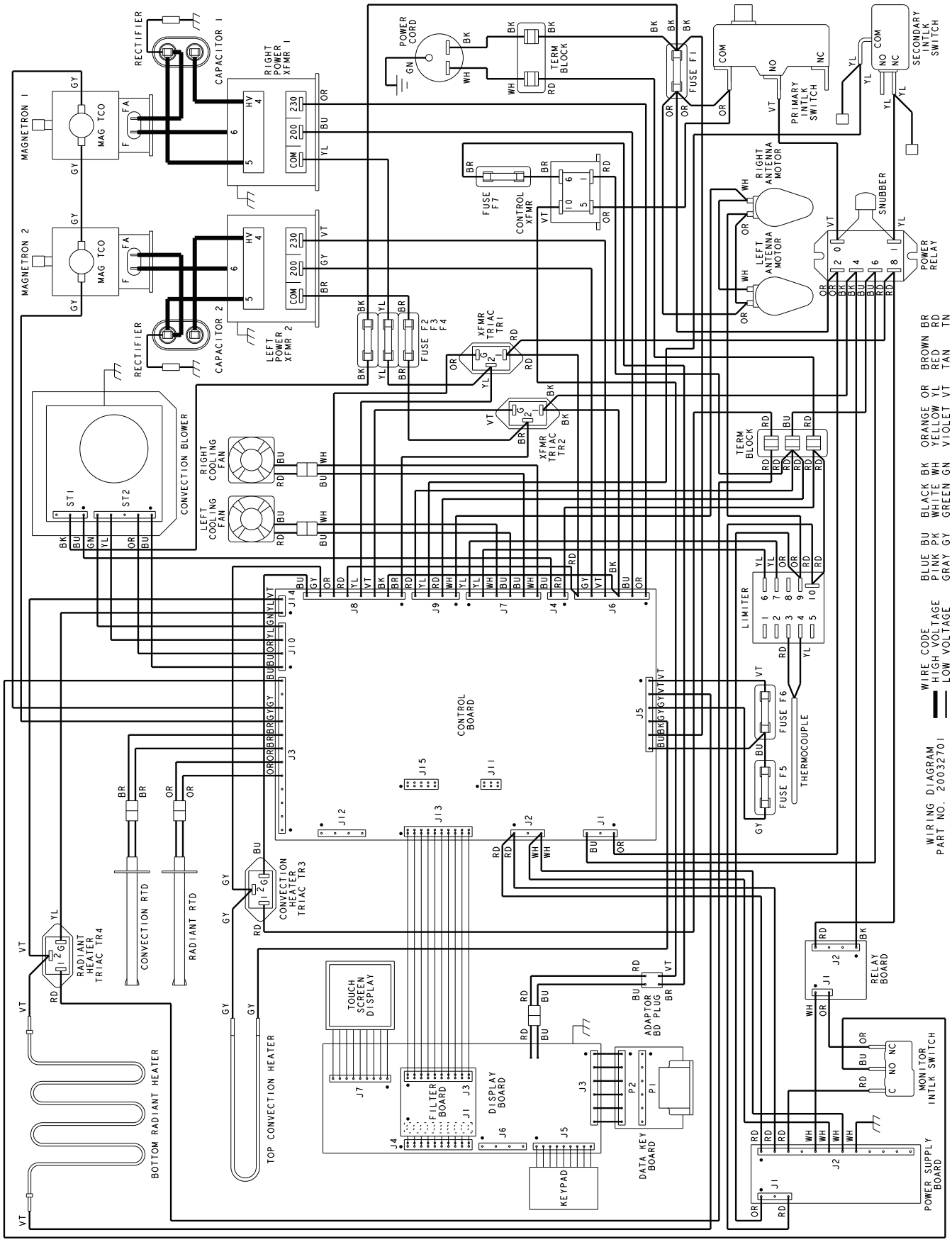
Wiring Diagram - AXP20 P1333601M, P1333602M, AXP20JB P1333606M, AXP20MK P1333612M, MXP20 P1333614M, P1333615M



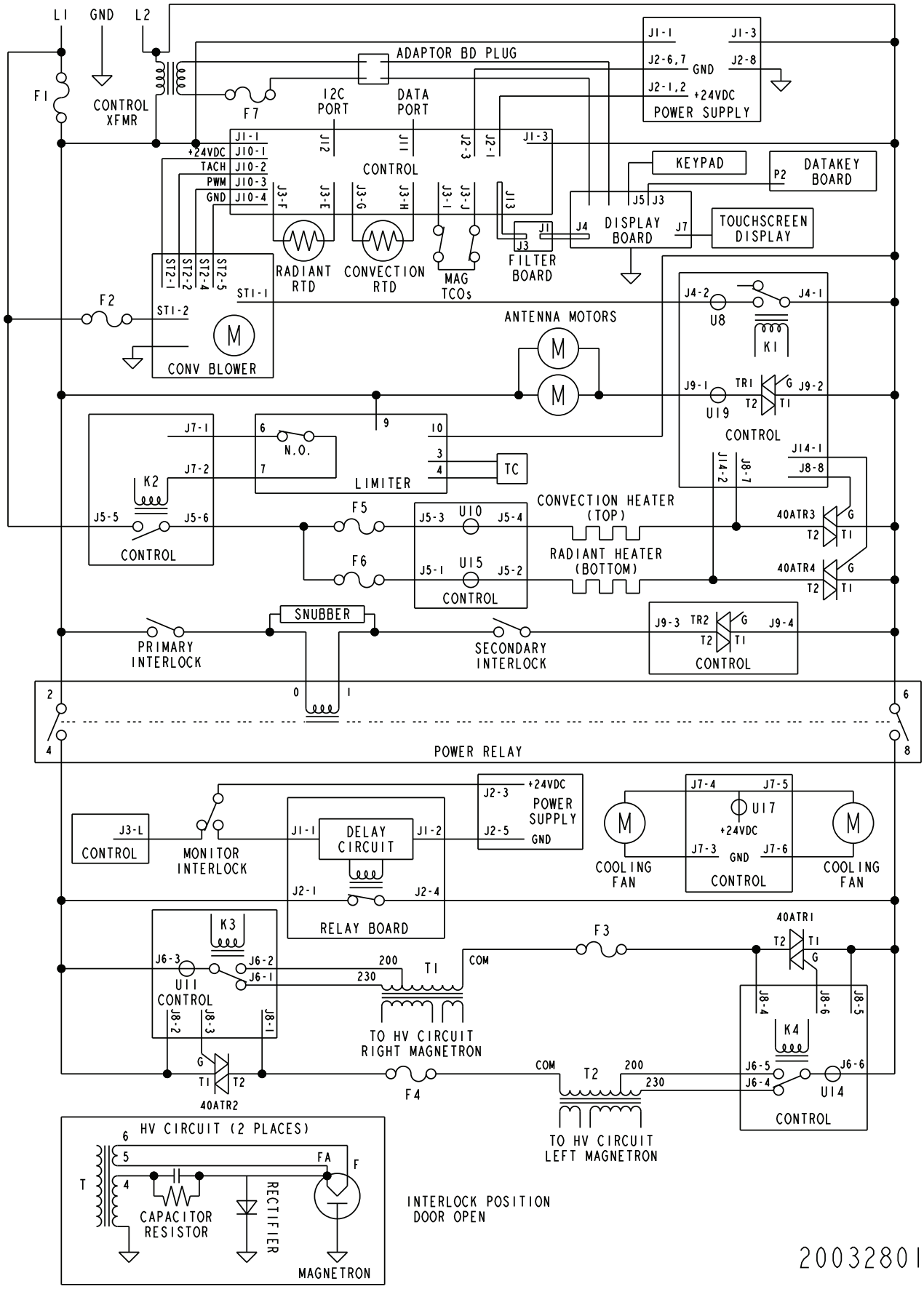
Schematic Diagram - AXP20 P1333601M, P1333602M, AXP20JB P1333606M, AXP20MK P1333612M, MXP20 P1333614M, P1333615M



Wiring Diagram - AXP20QT P1333610M



Schematic Diagram - AXP20QT P1333610M



Appendix A

AXP/MXP Care and Cleaning

Daily Cleaning Recommendations: Follow the recommendations below for proper maintenance of the AXP/MXP oven.
Please note: The use of caustic cleaning products or those containing ammonia, phosphates, chlorine, sodium or potassium hydroxide (lye) can damage critical oven parts. Do not use water pressure type cleaning systems. Use of unapproved cleaning agents will void the terms of the warranty.
Recommended Cleaning Supplies: damp towel, plastic scouring pad, ACP Oven Cleaner (Item CL10) and ACP Oven Shield Oven Protectant (Item SH10).

⚠ WARNING	Wear protective gloves and protective glasses when cleaning the oven. To prevent burns, handle utensils, accessories, and door with care. Allow oven, utensils, and accessories to cool before cleaning. Oven, utensils, and accessories become hot during operation.

I. For a new oven, before using it the first time:

When oven is clean, spray damp towel with ACP Oven Shield and wipe all interior surfaces. Do not remove Oven shield. Turn oven on and pre-heat to start cooking.

II. DAILY CLEANING

1A. If oven is hot: Shut oven off by pressing OFF button twice and open door. Fan will continue running until oven has cooled. Cooling takes 15-20 minutes.

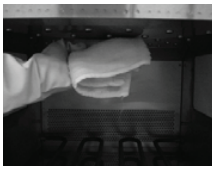
1B. If oven is cold: For optimum results heat oven to a maximum temp of 200°F (94°C), turn oven OFF, wait until fan stops.

2. Remove rack, pizza stone, and other accessories from the cavity when it's cooled

3. Lift Bottom Element
If element is warm, use insulated gloves, oven mitt or tongs to lift the element. Remove baked on particles using a scraper.

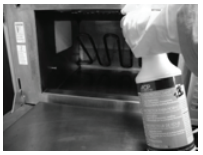
4. Spray Oven Interior
Wear rubber gloves and safety glasses. Spray oven door, sides and floor with ACP Oven Cleaner. Avoid spraying into perforations. Allow cleaner to soak for 2 minutes.

5. Clean Oven Interior
5A. Clean the oven door and interior using a plastic scouring pad on metal portions of oven. White ceramic covers on the both sides of the oven turn to a yellow tan color after usage. Gently clean the ceramic covers and red sealant, apply only gentle pressure while cleaning. If needed, repeat steps 4 and 5.



5B. Clean perforated area with damp towel sprayed with cleaner.

6. Wipe Oven Interior
Using a damp clean towel, wipe the oven interior, rinse towel and wring dry, repeat 2-3 times to remove remaining oven cleaner and particles from the oven.



7. Spray Oven Shield
When oven is clean, spray a thin layer of ACP Oven Shield on all interior surfaces. Place rack back in oven.
Do not remove Oven Shield.

8. Clean Oven Exterior
Clean exterior door and other surfaces with a clean cloth, sponge or nylon pad using a mild detergent and warm water solution.

III. WEEKLY CLEANING

1. Clean Air Filter
Remove the air filters located on each side of the oven at the base.
Wash filter in a mild detergent solution made with warm water.
Rinse and dry thoroughly.
Replace filters by sliding back into the side locations.

DO:

Clean oven daily

Use non-caustic cleaner

Remove food from oven at end of cycle

Use only accessories that are both high temperature oven-safe and microwave-safe.

Wash rack with warm, soapy water and air dry.

Clean pizza stone by using a **plastic** scraper to remove baked on particles.

DO NOT:

DO NOT use caustic cleaning products or those containing ammonia, phosphates, chlorine, sodium or potassium hydroxide (lye)

DO NOT use a water-pressure type cleaning system

DO NOT cook foods with plastic wrap on them

DO NOT use abrasive scouring pads to clean ceramic side covers and the red sealant surrounding each cover.

DO NOT wash or immerse pizza stone

DO NOT operate oven with out a load (empty) in microwave mode.

Any chemical questions please refer to Chemco's MSDS' for ACP Oven Cleaner and ACP Oven Shield Protectant or contact ACP, Inc. ComServ Customer Service.

ComServ
Commercial Service

866-426-2621

email: commercialservice@acpsolutions.com